

UC SOUTHERN REGIONAL LIBRARY FACILITY



G 000 005 730 7



THE LIBRARY
OF
THE UNIVERSITY
OF CALIFORNIA
LOS ANGELES

A DICTIONARY OF TREATMENT

441/

A DICTIONARY OF TREATMENT

INCLUDING MEDICAL AND SURGICAL
THERAPEUTICS

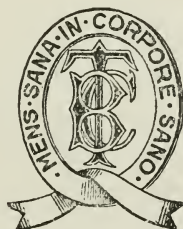
BY

SIR WILLIAM WHITLA, M.A., M.D., LL.D.

PROFESSOR OF MATERIA MEDICA AND THERAPEUTICS IN QUEEN'S UNIVERSITY, BELFAST
SENIOR PHYSICIAN TO, AND LECTURER ON, CLINICAL MEDICINE, ROYAL VICTORIA
HOSPITAL

AUTHOR OF "PHARMACY, MATERIA MEDICA, AND THERAPEUTICS" (NINTH EDITION)
"PRACTICE AND THEORY OF MEDICINE" (2 VOLS.)
ETC., ETC., ETC.

FIFTH EDITION



28TH THOUSAND

CHICAGO MEDICAL BOOK
CHICAGO
AMERICAN AGENTS

LONDON
BAILLIÈRE, TINDALL AND COX
8, HENRIETTA STREET, COVENT GARDEN

1912

[All rights reserved]

WB
300
W591d
1912
v.1

A DICTIONARY OF TREATMENT

706064

A DICTIONARY
OF
TREATMENT

INCLUDING MEDICAL AND SURGICAL
THERAPEUTICS

BY
SIR WILLIAM WHITLA, M.A., M.D., LL.D.

PART ONE

LONDON
BAILLIÈRE, TINDALL AND COX
8, HENRIETTA STREET, CONVENT GARDEN

1912

Biomedical
Library

WB

300

W591d

1912

v.1

TO
THE BRITISH MEDICAL MISSIONARIES
WHO IN MANY FOREIGN LANDS
ARE SHOWERING THE BENEFITS OF THE HEALING ART
UPON THE POOR AND NEEDY
THIS VOLUME IS GRATEFULLY DEDICATED
AS A FAINT RECOGNITION
OF THEIR NOBLE AND SELF-DENYING EFFORTS
BY
THE AUTHOR.

PREFACE TO THE FIFTH EDITION

THE last very large edition was exhausted sooner than the author anticipated, and the book has been out of print for some years. The interval has been one of ceaseless change and of marked progress in nearly every department of Therapeutics, necessitating such a thorough revision of the former work that the author felt compelled to rewrite it, and the present volume may be regarded as a new book in which he has endeavoured to formulate the results of a more mature experience, whilst at the same time he has laboured to do justice to the numerous fresh advances established over the wide field of rational treatment.

As in former editions, the Therapeutics of Medical, Surgical, Ophthalmic and Cutaneous affections have been included. The articles dealing with the Therapeutics of Gynæcology and Obstetrics have been entirely entrusted to Dr. Robert J. Johnstone, whose position on the staff of the Royal Victoria and of the Belfast Maternity Hospitals is a guarantee of his experience and fitness for the work.

Notwithstanding all efforts to keep the volume within its former compass by the omission of everything of minor importance, it has considerably outgrown its former dimensions, though it is still to be hoped that it is not too large for convenient reference in all emergencies.

The author is again indebted for the valuable assistance of Dr. Victor Fielden in aiding the work through the press and for the compilation of the copious index. He feels deeply gratified by the numerous expressions of thanks which continue to reach him from his medical brethren at home and abroad who have found the "Dictionary" helpful in their arduous professional routine, and he trusts the present volume will prove equally useful. Since the last issue of the work new editions have been printed at Hangchow in the Chinese language.

LENNOXVALE HOUSE,
BELFAST,
March, 1912.

PREFACE TO THE FIRST EDITION

THE issue of each edition of the writer's work on Pharmacy, Materia Medica and Therapeutics, brought suggestions from many members of the profession, both teachers and practitioners, upon the necessity of appending to it a Therapeutic Index, or Index of Diseases, for reference. With the view of acting upon these suggestions, and of furnishing the practitioner and student with a complete list of drugs suitable for the treatment of the various diseases, a Therapeutic Index, such as forms a portion of nearly every modern work on Materia Medica, was commenced. It soon, however, became evident that the practitioner or student would be assisted but little by a mere enumeration of the drugs suitable to the treatment of each affection, unless the list was accompanied by some expression of opinion regarding the relative value of each drug, and of the different methods by which it might be employed.

What was at first undertaken with the intention of being compressed into 50 or 60 pages, has gradually grown into a volume of nearly 1,000 pages, and the greatest difficulty was experienced at every point in keeping it within its present limits. The necessary condensation prohibited the discussion of pharmacological questions, and necessitated the briefest reference to authorities, the writer having to remain content with giving the results of his own practical experience in the briefest manner possible, before mentioning the various methods of treatment pursued successfully by others.

Surgical questions are treated for the most part briefly, but the writer has frequently expressed his own opinions, formed during several years of practice, when surgical methods formed the major part of his daily work, in conjunction with the late Professor Gordon.

8, COLLEGE SQUARE NORTH,
BELFAST,
December, 1891.

A DICTIONARY OF TREATMENT

ABORTION.

Threatened Abortion.—When a woman in the first six months of her pregnancy begins to lose blood, she should at once be put to bed. So long as the loss is moderate in amount—*i.e.*, not much exceeding the average menstrual flow, and so long as there are no signs of death or decomposition of the ovum, the case should be treated on expectant principles. As soon, however, as the patient's general health begins to suffer from the amount or continuance of the hæmorrhage, should large or numerous clots be passed, or fragments of the ovum or decidua, or should fœtor or rise of temperature be noted, it is well to hasten the clearing out of the uterus.

The most important of the expectant measures is complete rest in bed, which should be insisted on, no matter how slight the hæmorrhage, and which should be maintained until a week after bleeding has ceased. While the patient is in bed she should have light diet, avoiding all highly seasoned dishes and stimulants of any kind, and purgatives should be avoided. A gentle aperient, such as Liquid Cascara and Glycerin, to be followed in the morning by a saline draught if required, should be given to prevent constipation. As to drug treatment, it is advisable to give Morphia, $\frac{1}{4}$ gr., on first seeing the patient, and if the hæmorrhage continues the dose may be repeated at intervals of three hours until a grain has been given. Ergot is recommended in 10-min. doses three or four times a day, and may be combined with Pot. Brom. 20 grs. Quinine is also recommended in 5-gr. doses three times a day. Ext. Viburnum Prunifolium in 20-min. doses every four hours is a favourite remedy. I find Parke Davis' Liquor Sedans in $\frac{1}{2}$ to 1 dr. doses as satisfactory a drug as any.

When the urgent symptoms have passed off, and the patient is convalescent, she should be warned against any extra exertion, against constipation, coitus, strong purgatives, and hot vaginal douches. Should the loss have occurred at the time when menstruation would have taken place in the ordinary course of events, she should keep her bed for four or five days at the next recurrence of that epoch, and she should be warned of the importance of taking to bed on the first sign of a return of the hæmorrhage or of pain in the back.

In view of the fact that infection has been shown to occur in the majority of cases of threatened abortion, it is wise for the prac-

itioner to abstain from frequent vaginal examinations. Should the hæmorrhage last several days, and be accompanied by the retention of clots in the vagina, I think it is well to wash out the vagina with a very gentle lukewarm douche of creolin or lysol, 1 dr. to the pint.

Inevitable Abortion.—When the progress of events has shown that a threatened abortion has become inevitable, when the initial symptoms have been copious hæmorrhage accompanied by strong uterine contractions and pain in the back, when the case is already septic on his first visit, or when he has reason to suspect a criminal abortion, which almost invariably results in sepsis, the practitioner's object should be to accomplish the safe, rapid, and complete emptying of the uterus. When this object has been achieved, the hæmorrhage stops, the uterus contracts firmly, and unless the case is septic recovery rapidly ensues.

If the practitioner finds on arrival that the hæmorrhage has ceased and the uterus has firmly contracted, he has presumptive evidence that the ovum has been expelled. This presumption becomes a certainty should he find the ovum in the vagina or should he be able to satisfy himself of its presence in the clots passed *per vaginam*. When this is the case, there is nothing to do but to enforce rest in bed for a few days, and to see that the patient's vulva is sponged with an antiseptic and covered by a sterile pad.

Should the ovum be contained in the cervical canal, the patient should be placed in the left lateral or preferably in the cross-bed position, the vulva should be washed with sterilised liquid scap, and redundant hair removed with scissors or razor, a vaginal douche of 1 in 4,000 perchloride of mercury or of 1 dr. to the pint creolin, lysol, or other coal-tar derivative administered, and the ovum removed by the fingers. This can be easily done if the external os is open. If it be closed, and the cervical tissues stretched over the ovum, a slight snick at two or three points on the margin will allow the enucleation to be effected. A douche should then be given and a sterile pad put in place.

If the ovum in whole or part is still in the uterus, the procedure to be adopted will largely depend on whether the cervical canal is fully open or partially closed, and also on the answer to the question whether pregnancy has advanced beyond the third month, as after that date the risk of a serious and alarming hæmorrhage is much increased.

If the canal is not yet fully dilated, or if it has closed again after the expulsion of a part of the ovum, the practitioner will do no harm by plugging the vagina. The vulva is first washed and sterilised as already described, and a vaginal douche administered. The posterior vaginal wall is then held back by a speculum or by the first two fingers of the left hand. The plugging material may be iodoform gauze, which can be bought in tins ready sterilised, or bismuth gauze, or pledgets of cotton-wool

rolled up and fastened with a piece of stout thread or string. The gauze or wool should be wrung out of 1 dr. to the pint solution of lysol or creolin before being introduced into the vagina. Whatever material is used should be introduced in a methodical manner; the posterior fornix should first be filled, then each lateral fornix, and lastly the vagina in front of the cervix. The plug should be left in place for from 8 to 12 hours, and a small dose of morphia may be administered to quiet the patient during the interval. The results of the plug are often very satisfactory. On removing it dilatation of the cervix will be found to have taken place, and in very many cases the ovum will have been expelled, and will be found in the upper end of the vagina, or protruding through the cervix. Should this not have occurred, the treatment of the case will fall under that detailed in the next paragraph.

When the os is fully dilated, the practitioner should proceed to empty the uterus. The strictest antiseptic precautions should be taken, the vulva washed again and sterilised, and an antiseptic vaginal douche given. The cross-bed position will be found the most satisfactory, although the operation may be done with the patient lying on her left side. If the pregnancy is an early one, say before the third month, I think the best way to empty the uterus is with the curette. I am aware that many distinguished authorities advise the finger, but I have serious doubts if it is possible at this early stage to peel the ovum completely off the uterine wall with the finger, and although it may be possible to shell the ovum out of the cervical canal when it has left the uterine cavity, it is certainly not possible to hook it out of the uterus and through the cervical canal with only the tip of one or at most two fingers as a tractor. If the finger alone is used, there is, therefore, considerable risk of leaving part—it may be a small part—of the ovum behind, and as it is undoubtedly more difficult to provide an aseptic finger than a sterilised curette, there is added the risk of sepsis. I advise the practitioner to boil his speculum, tenaculum, and curette, and to place them in a basin of lysol or creolin solution. Pass the speculum, seize the cervix with the tenaculum, and pass the curette carefully into the body of the uterus up to the fundus. Remember that only a very light touch is necessary to detach the ovum from the uterine wall, and go carefully and thoroughly over the whole of its interior. When detachment of the placenta has been effected at one point, it is usually rapidly and easily completed, the uterus begins to contract, and the secundines present at the os, where delivery may be facilitated by grasping them with a pair of ovum or tongue forceps and pulling on the mass. If the foetus is still in the uterus, it may be grasped and extracted with forceps; this will be done more easily if the head be perforated with the curette. The operation is completed by an intra-uterine douche with a Bozemann's catheter. Before administering

it is advisable to pass the finger up to the fundus to make sure that no tags of placenta have been left adhering to the uterine wall. There is little risk of perforating the uterus if the operator will remember that perforations are caused by pushing the end of the instrument too far or by scraping too vigorously, and if these points are remembered the risk is, if anything, rather less with a sharp than with a blunt curette. The aborting uterus sometimes dilates suddenly, and the cessation of resistance gives exactly the sensation of the instrument having passed through the wall, but it rapidly regains its tone and relieves the operator's mind. If a perforation actually occurs, no harm will be done provided strict antisepsis has been observed and a flushing curette is not being used. After the third month it is more expeditious, and probably safer, to use the fingers. The uterine cavity is now larger; it is therefore more difficult to be sure of dealing with the whole surface with the curette, and at the same time it affords more room for the skilful manipulation of the fingers. As many fingers as possible should be introduced through the os, and should be used to peel off the placenta, while the other hand grasps the fundus through the abdominal wall and makes pressure on it, so as to bring every part of the wall within reach of the internal hand. Complete removal should be verified by examination, and an intra-uterine douche then given.

In the after-treatment of a case of abortion there is little to call for attention if strict antisepsis has been observed, and the case follows an aseptic course. Many operators prefer to pack the uterine cavity lightly with gauze after clearing it out, with the object of preventing any further hæmorrhage. Should this have been done the gauze should be withdrawn at the end of 24 hours, and a daily douche administered for a week, during which the patient should be kept in bed. After that time has elapsed, she may be allowed to get up and go about. Should the case be septic from the first, or become so in process of treatment, it should be treated on the same lines as a case of Puerperal Sepsis (*q.v.*).

Habitual Abortion.—When a woman aborts more than once an endeavour should be made to discover and to remedy the cause of the repeated failure to carry the ovum to term. The first thing to do is to make sure that the abortions are not caused instrumentally or by drugs, a practice which is on the increase to an alarming extent, especially among town-dwellers. Such a practice may be suspected when the doctor is only called in after the loss has lasted for some time and the uterus is perhaps already septic, when the patient is quite unconcerned about the untimely fate of her offspring, or is even undisguisedly relieved by it. Some diplomacy in questioning must be observed if the practitioner does not want to lose his patient, but if the diagnosis be once made, a faithful warning should be given of the dangers and the criminality of the practice. It was an old observation that one abortion was often followed by a second, and that a "habit of abortion"

was likely to be set up. In most cases this so-called habit is due to the inefficient treatment of the first abortion, part of the secundines being left adherent to the endometrium and setting up a localised endometritis sufficient to form the starting-point of a second miscarriage. The remedy is obvious, and in the case of a healthy woman, with no malposition of the uterus, repeated abortion should be the strongest indication for a careful curetting, which will usually put a stop to the trouble.

A pelvic examination will often show some gross lesion of the uterus, which may act as a predisposing cause. Such are retroversion, extensive cervical laceration with endometritis, and fibroid of the uterus. The appropriate treatment for these troubles will often be effectual in enabling the patient to carry her child to term.

In other cases the symptoms of a systemic or general disease will be found. Of these, a very common cause of abortion is syphilis. The possibility of syphilis being at the bottom of the trouble should always be remembered by the practitioner, as the mother may show practically no symptom of the disease except the tendency to abort. It is well to have a private conversation with the husband, and to learn his previous sexual history, and if there is any doubt as to the diagnosis a sample of blood should be taken and Wassermann's test performed. Cases which are established as syphilitic should be put on mercury at once for a period of six months, and it is as well to include the husband in the treatment. If a long course of mercury has already been taken, iodides should be given. The effects of salvarsan are still upon trial, but I should be much inclined to give an injection in a case which had been subjected to a course of mercury and still aborted. When the patient becomes pregnant again, she should be put on 1 gr. of grey powder three times a day for three weeks, then a week's interval should be allowed, then the mercury again for three weeks, and so on till term.

The other general diseases which lead to abortion are renal and cardiac trouble. For the treatment of these see appropriate headings. It should be remembered that certain drugs may cause or predispose to abortion. Chief among these are phosphorus, lead, and alcohol, and the possibility of poisoning by one of these should be inquired into in a doubtful case. Aloes, senna, savin, pennyroyal, ergot and cottonroot have the reputation of abortifacients, and probably in a sensitive patient and in large doses may justify it.

Lastly, in a patient who has shown a tendency to abortion, care should be taken to warn her as to the advisability of exercising precaution, especially at the time when the menstrual flow should come on in the ordinary course. She should then keep her bed for a day or two, live on light diet, keep the bowels relaxed but avoid purgation, and sexual intercourse should be strictly forbidden. Bromides may be given in small doses, or

20 mins. of the fluid extract of viburnum prunifolium every 4 hours, or 1-3 grs. of quinine with 10-15 mins. of ext. ergot. liq. three times a day. She should be warned to take to bed on the first sign of pains or hæmorrhage.—R. J. J.

ABSCESS.

Whether this be *Acute* or *Chronic*, in the great majority of cases the presence of pyogenic organisms is the causal factor, and all treatment must be directed by this consideration. The localized inflammation which is so liable to eventuate in suppuration may under certain favourable conditions resolve itself without reaching the stage of pus formation, thus the vital resistance afforded by the patient's tissues or blood may be sufficient to neutralise the destructive action of the chemical poison secreted by the cocci or bacilli. Formerly the surgeon attempted to increase this resistance by large doses of Quinine, Iron, Belladonna, Sulphides, etc., administered by the mouth, a practice which is rapidly falling into disuse. The Vaccine method introduced by Wright has been frequently employed with success in many suppurative conditions, as in boils, acne, and erysipelas, where suppuration has been prevented by increasing the natural resistance of the tissues through the introduction of a vaccine consisting of the sterile organisms causing the local inflammation, as will be mentioned under the heading of these affections.

The *Preventive* measures to be employed in the treatment of a localised inflammation threatening to end in pus formation are—(1) Absolute rest to the affected part. (2) Elevation of the limb, in order to restore the disturbed circulation and to prevent congestion and œdema, which by increasing tension endanger the vitality of the tissues. (3) Moist warmth acts in a similar manner by causing their relaxation, hence the value of poultices in the early stage when the skin is still unbroken. (4) *Cold*, by causing contraction of the small vessels, effects the same purpose when continuously employed. With these latter measures may be combined—(5) The use of local anodynes, such as the green extract of Belladonna or Ichthyol, diluted with glycerin. (6) Counter-irritants of a mild type, as tincture or liniment of Iodine, may sometimes be found to prevent the suppuration of superficial lymphatic glands. (7) When, notwithstanding the use of the above agents, tension continues to rise and threaten the integrity of the affected tissues, a number of small incisions or deep punctures may be made, so as to drain the part of its increased blood and lymph supply, and the effect may be intensified by the application of a cupping-glass or by Bier's method of applying an elastic ligature at a distance above the seat of inflammation so as to cause venous congestion without interfering with the arterial circulation.

Where pus has already formed, and an acute abscess has resulted, the above agents are inadmissible, and no time should

be lost in waiting for the pointing of the pent up collection towards the surface, for by delaying its evacuation further necrotic action in the surrounding zone is encouraged. A free incision should be made, therefore, without delay by a sharp-pointed abscess-knife or bistoury, without waiting for unequivocal signs of obvious fluctuation. In deeper abscesses, where the surgeon is in doubt, a hypodermic or grooved needle may be inserted. For the evacuation of superficial small collections of pus, the application of a spray of Ether or Ethyl Chloride will establish the necessary degree of local anæsthesia; and sometimes it may be found sufficient to touch the skin with the stopper of the Carbolic Acid bottle, which causes numbness and materially lessens the pain of the incision, or Cocaine may be injected.

For the opening of deep abscess a higher degree of anæsthesia is usually necessary, and chloroform narcosis may be employed; nitrous oxide is preferable, but less convenient. The skin having been washed with any antiseptic solution, a free and deep incision should be made with due regard to the configuration of the surface markings, so as to minimise the deformity of the resulting scar and to insure drainage. After the evacuation of the pus, the wall of the abscess cavity should be gently rubbed with sterile gauze, and swilled with weak antiseptic solution. Where there has been any evidence of burrowing, and especially in abscesses situated in the neighbourhood of large vessels, as in the neck or axilla, Hilton's plan should be followed. This consists in inserting through a deep skin wound the closed blades of a pair of dressing forceps, which can be forcibly opened so as to separate the deeper tissues and insure thorough evacuation without endangering arteries or important nerves. In very large abscesses, especially where the necessary line of incision does not afford efficient drainage, a counter opening at the most dependent part may be required, and a drainage-tube inserted. The old plan of a small puncture through which the abscess contents were forcibly squeezed, and then a fine drainage-tube inserted, has given way to the free incision, swabbing of the wall of the cavity, and the packing of the sac loosely with dry sterilised gauze, after thorough irrigation. In large abscesses with much necrotic tissue, which cannot be safely extracted at the time of incision, a wide drainage-tube must be inserted, and the cavity flushed out daily with weak antiseptic till all sloughs are removed. Hydrogen Peroxide, when cautiously used, affords excellent results.

As the cavity shrinks in size and becomes lined with granulations, the gauze can be removed; in the meantime dry dressings are all that are required.

Chronic Abscesses are in the great majority of cases of tubercular origin, and must be treated differently from the acute form. The aim of the surgeon should be not only to effect evacuation of the purulent or cheesy contents, but to remove every trace of

the tuberculous tissue by scraping, curetting, or dissecting out the walls of the cavity under an anæsthetic. It is needless to say that as the contents of most chronic abscesses are sterile, strict antiseptic precautions should be maintained to prevent the introduction of pyogenic organisms. After the thorough removal of the cavity walls and of all necrotic tissue by irrigation, the space is to be lightly packed with sterilised gauze, no drainage-tube being used when possible to be avoided. In some instances gauze can be dispensed with, the lips of the incision being sutured, and a layer of dry dressing laid over the part as after the removal of a tumour. In the more extensive chronic abscesses after the removal of the gauze secondary sutures may be applied as granulation has become established ; absolute rest to the limb or part involved is also essential.

As will be described under Psoas Abscess, through a small incision the cavity is to be thoroughly flushed out with warm saline solution, rubbed and dried by gauze, after which iodoform, oil of sesame, and spermaceti emulsion is injected, and the wound sutured and treated with dry dressing, no drainage being provided.

The practice of applying linseed poultices to acute and chronic abscesses after incision is now abandoned. Where inflammatory pain and œdema have already spread into the neighbouring tissues the best procedure is to apply a boric acid compress. Layers of lint soaked in warm saturated boric acid solution and covered by oiled silk, procure, without danger of secondary infection, all the benefits that could be obtained from the older septic applications. Carbolic Lotion (1 in 40), Spirit Lotion (1 in 3), weak Permanganate or Corrosive Sublimate Solution may be used in a similar manner either as a poultice or, if uncovered by impervious dressing, as an evaporating lotion.

Some surgeons, in order to avoid the dangers of an infection of the healthy, freshly incised skin wound by the bacilli, which sometimes are found active in old tuberculous abscesses, recommend aspiration of the cavity, followed by flushing with Hydrogen Peroxide, etc., and the injection of Iodoform Emulsion, or a solution of this drug in ether ; but better results are obtainable by free incision, removal of the cavity walls, and suturing without drainage.

Where a shrunken cavity remains connected with the surface by a sinus splendid results are now obtained by forcibly injecting through the sinus a warmed mixture of Bismuth Carbonate 33 parts, and Vaseline 67 parts, and permitting it to be slowly expelled by the contraction of the tissues. The injections should be repeated every few days, and sinuses of tuberculous origin which have remained discharging for many years may be completely healed up in a few weeks or months by this method.

Emil Beck accepts the rules laid down by Calot for the treatment of chronic abscesses : (1) That it is not permissible to open

such abscesses when they are not easily accessible; (2) that it is a pressing duty to open chronic abscesses when there is danger of spontaneous rupture. As regards Calot's third rule—(3) that it is permissible to open those chronic abscesses which are easily accessible, even if spontaneous rupture is not threatening, Beck urges the necessity of putting off the operation so long as the patient has little pain and no high fever, provided that there is no steady deterioration in general condition.

His method of treatment if operation is needed is removal of the pus, followed by the injection of Bismuth Paste, and since 1908 he carries out the following method when a chronic abscess seems ready to burst: An incision $\frac{2}{5}$ - $\frac{1}{5}$ inch is made into the cavity which is then emptied. Not more than 100 grms. ($3\frac{1}{2}$ oz.) of a 10 per cent. Bismuth-Vaseline paste is then injected through the incision, gentle massage is applied over the whole neighbourhood of the abscess in order to insure if possible the complete penetration of the paste into every recess of the abscess cavity. A fresh sterile gauze bandage is applied daily, and as the walls of the abscess tend to shrink, the paste is expelled constantly in small amounts through the original wound; should the latter heal it must be opened by a fresh incision, but re-injection of the paste is not necessary.

Beck claims for this method of treatment results obtainable in no other way: (1) The consistency of the paste, which should be injected in a warm condition and of creamy fluidity, permits the egress of all secretion, whilst at the same time it acts as an efficient barrier to the introduction of all organisms from without. (2) One injection usually suffices to effect a cure. (3) It is devoid of pain or irritation, though a marked local leucocytosis supervenes, and there is very little danger of bismuth-poisoning. The method is very suitable for the treatment of suppurating glands, pararectal abscesses, and all chronic abscesses connected with bone disease.

Recurring acute or chronic abscesses should always call for *Vaccine* treatment to supplement the surgical measures, the vaccine being prepared from cultures obtained from the seat of suppuration; in the case of tuberculous abscesses the vaccine is prepared from Tuberculin.

The special treatment of abscesses in different parts of the body will be described under their separate headings. See also the article on Lymphadenitis.

ACHYLIA GASTRICA.

Achylia Gastrica, or the form of dyspepsia characterised by absence of the acid stomach secretion, is best treated as a gastric neurosis. The management of this affection will be referred to under Dyspepsia, but it must be remembered that achylia may be the only symptom of a true atrophy of the secretory elements in the gastric mucous membrane, and it may be in other cases

the secondary result of cancer or of a profound dyscrasia, as pernicious anæmia. The diet should be such as will readily pass through the atonic stomach for intestinal digestion, as in cases after gastro-enterostomy. Whilst, as in hypochlorhydria, much benefit may be derived from the administration of predigested foods in small amounts at short intervals, the best results are obtainable from a combination like the following, which takes the place of the absent secretion and improves at the same time the motor power of the stomach—

R. *Acid. Hydrochlor. Dil.* ʒvj.
 Liquor. Strychninæ ʒij.
 Glycerin. Pepsinæ ad ʒiv. *Misce.*

Sumat ʒj. ex ʒii. aquæ statim post cibum.

ACIDITY, Gastric.

Much confusion exists regarding the nature and the treatment of this common condition—a confusion which has become intensified by the temptation of conveniently labelling every form of functional stomach ailment as a gastric neurosis. In many instances the regurgitation of the acid liquid, which comes on at the middle or late stage of the digestive process in the stomach, causing much pain and distress, has no connection with the condition known as hyperchlorhydria or excess of HCl in the stomach, but on the contrary is too often a result of deficient acid secretion, which permits of fermentation, ending in a large production of lactic, acetic, and butyric acids.

Preventive measures consist (1) in a diminution in the amount of farinaceous and fatty foods, especially of fat meats baked in the oven, of beer, acid wines, badly made pastry, etc., and the administration of under-cooked red meat; (2) the establishment of oral asepsis by the removal of decayed teeth, and the use of such dental appliances as will insure thorough and slow mastication of the food, which should be given at regular intervals of 4 to 6 hours in order to insure the complete emptying of the stomach before the next meal is eaten. One large dose of Bicarbonate of Sodium (ʒi), freely diluted, generally gives immediate relief, and in chronic cases the combination of 3 grs. Papain with the alkali will cause neutralisation of the organic acids without hindering the digestive process, which is hastened by the papain. In severe acute cases following the ingestion of baked pork and bad pastry, it may be necessary to cause emesis, but a large dose of alkali is a wise preliminary, since the stomach contents may be so highly acid as to cause irritation about the epiglottis during the act of vomiting, or lavage may be employed. This latter measure will be indicated in all cases where there is impaired motility or obstruction at the pylorus, when the fluid employed may advantageously be charged with antiseptics like

Creosote or Permanganate Solution to insure neutralisation or destruction of abnormal ferments before fresh food is introduced.

Creosote in 2 or 3 min. capsules, an equivalent amount of Carbolic Acid in pill, 5i doses of Sulphurous Acid freely diluted, teaspoonful doses of freshly dried Charcoal, given in wafer paper, or 5 min. doses of the Oil of Peppermint may be administered about 1 hour after each meal. Occasionally a large dose (10 grs.) of Pepsin gives relief, but it is inferior in most respects to the following combination :

R. *Bismuthi Carb.* gr. x.
 Magnesii Carb. Pon. gr. xx.
 Papain (Finkler) gr. iii.
 Sodii Bicarb. gr. xx.
 Morphiæ Hydrochlor. gr. $\frac{1}{18}$. *Misce.*

Fiat pulvis. Mitte tales xviii. St. i. ter in die post cibos.

As regards diet, the mistake is too commonly made of prescribing a cut-and-dried regimen, which is liable to depress the gastric function by its routine sameness. Farinaceous foods and fats should be restricted, and fish, poultry, tripe, and carefully made soups may be freely partaken of, the patient being left to his own judgment to abstain from all articles of diet which he knows, by previous experience, increase his acid discomfort. He can, however, be assured that by taking his alkaline powder he may often eat without risk such articles of diet as lean chops and roast meat, fresh vegetables, milk, etc., when these were before inadmissible. Beer, wines, pastry, pork, and fresh fruits are, however, better left alone, as are also all hashes, stews, and *re-cooked dishes* of every description. Some patients do well for a time upon large quantities of raw meat, as in the Salisbury treatment. Where the acidity is due to a gastric neurosis—gastrosuccorrhœa (Reichmann's disease), or gastroxynsis (Rossbach's disease)—the underlying neurotic condition will require primary attention, and the same remark applies to the hyperchlorhydria of ulcer.

ACNE.

The skin affection known as *acne vulgaris* often, but not always, arises from the comedone formations (*acne punctata*), which involve the plugging by retained secretion of the sebaceous glands on the face and upper portions of the trunk. These so-called "black heads" are only affected by local treatment; this consists in daily vigorous scrubbing of the parts with a coarse towel after the liberal use of soap and warm water, followed by the expression of the sebaceous matter by a suitable instrument formed like the end of a watch-key, which is forcibly pressed against the skin surrounding the comedones. After the emptying

of these, any antiseptic ointment should be firmly rubbed in so as to reach the interior of the dilated follicles, the best application being a weak Sulphur ointment 10 per cent., or Resorcin 5 per cent. Where greasy applications are objectionable to the patient the skin may be freely swabbed by the sulphur lotion given below.

Where *acne vulgaris* has become already established a true inflammatory condition is present in and around the sebaceous glands, and a less vigorous friction is indicated; nevertheless, thorough cleansing twice a day of the skin by steaming or washing with hot water and soap and rubbing dry with a coarse linen towel are essential. After this has been accomplished each pustule should be incised with a sharp-pointed, narrow-bladed abscess-knife, and the contents gently squeezed out. The next step in the treatment should be directed to the local destruction of the acne bacillus along with the staphylococcus, which almost invariably accompanies it. This is best achieved by rubbing in the following ointment of Unna:

R. *Hydrargyri Perchlor.* gr. iiij.
 Resorcin. Purif. gr. xxx.
 Pulv. Amyli (Oryzæ) ʒv.
 Ungt. Zinci Benz. ad ʒij. *Misce.*

The young practitioner is bewildered with the number of formulæ recommended for the treatment of acne, and is tempted to try one after another without due regard to the principle upon which the success of all of them depends—viz., the evacuation of the sebaceous pustules and the thorough disinfection of the greasy skin and follicles. Lotions are valueless until the oily secretion has been thoroughly removed by a superfatted basis soap or by Eichhoff's Sulphur-Camphor Soap, or by Crocker's Alkaline Liquid Soap, which consists of equal parts of Soft Soap and Spirit to which 6 per cent. of Thymol is added. Sometimes powdered Borax mixed with water more thoroughly removes the seborrhœic secretion. After the use of these detergents, should there be much irritation remaining, the following lotion may be freely applied with advantage and allowed to dry upon the face.

R. *Sulphur. Præcip.* ʒvj.
 Calaminæ Præpar. ʒss.
 Eau de Cologne ʒiv.
 Aquæ Rosæ ʒv.
 Aquæ Calcis ad ʒxij. *Misce.*

In ordinary cases after the cleansing and evacuation of the pustules a weak Sublimate solution—Hyd. Perchlor., gr. x.;

Spt. Rectif., ʒj. ; Glycerin., ʒj. ; and Mist. Amygdal. ad ʒxij.—may be applied two or three times a day, but this should not be used at the same time as the sulphur lotion. It is a good plan to use ointments at night such as Unna's above-described or Sulphur 1 part, Resorcin 1 part, and Lard 10 parts, or Unna's Sulphur Paste—Sulph. Præcip., ʒiv. ; Terræ Siliceæ ʒj. ; Zinc. Ox., ʒiij. ; Adeps Benz., ʒij. ; or Hypochloride of Sulphur 1 dr. to 1 oz. Lard. In the daytime the sublimate or sulphur lotions may be applied several times after the complete removal of all traces of the previous night's ointment by steaming the face and washing with soap and borax.

A very successful plan when the eruption is of limited extent is to insert into each incised pustule a small pointed piece of wood dipped in pure Carbolic Acid. Walter Smith's modification of this method often succeeds. He touches the summit of each pustule with strong Carbolic Acid, and covers over the spot with a layer of collodion.

Where there is much seborrhœa Vlemingx's solution may be applied as in the treatment of scabies. When great induration is present, after steaming and washing, Diluted Citrine Ointment may be forcibly rubbed in or Hebra's Solution—Green Soap—diluted with half its weight of strong spirit may be applied. Sometimes benefit in such cases follows a short series of exposure to the X rays, and this plan is especially suitable in *acne scrofulosorum* ; Chromotherapy has been successful in ordinary acne, violet or green light being used in acute cases. In the rare form known as *Acnitis*, little good is to be expected from any local applications ; the papules should be incised and then curetted by a suitable instrument.

Vaccine treatment has of late years been found to give excellent results in cases which have resisted all local measures ; the best method is to prepare a culture of the acne bacillus extracted from a pustule on the patient's face. In a few days this will be found to flourish on Fleming's oleic acid agar medium and a weekly dose of 10,000,000 killed bacilli may be injected. When pustulation and induration are very prominent features in the case 250,000,000 of killed staphylococci (also originally obtained from the patient's own lesion) may be injected along with the acne bacilli. In most inveterate cases complete disappearance of comedones and pustules has been observed after from twelve to twenty inoculations, but relapses are not uncommon.

The internal drug treatment of acne is in an unsettled condition, but many observers believe that suppuration can be checked by $\frac{1}{8}$ gr. doses of Calcium Sulphide in pilules, whilst some put their faith in teaspoonful doses of Yeast or 10 grs. Yeast Nuclein. Precipitated Sulphur in $\frac{1}{2}$ -dr. doses may be tried, but Arsenic is of very doubtful value. Ichthyol ($\frac{1}{2}$ -dr. capsules) seems to act beneficially where there is much erythematous redness surrounding the sebaceous glands.

Any accompanying menstrual or gastric derangements should receive close attention; plethoric patients are decidedly benefited by Saline Purgatives, and debilitated subjects improve as regards the severity of the eruption under large doses of Cod-Liver Oil. Fermented liquors almost invariably increase the malady, and every article of diet liable to induce dyspeptic symptoms, as pastry, pork, and re-cooked dishes, should be forbidden.

ACROMEGALY.

Little can be expected from the administration of drugs in this progressive malady; the early hopes raised by the premature reports of cures under the use of Pituitary Gland Substance have been abandoned. It is still, however, used as a routine, and appears to be harmless. Thyroid Extract does for a time appear to retard the progress of the deformity, but soon loses its efficacy, and the same can be said of large doses of Iodides.

In the late stages of the disease the intense headache may be partially relieved by large doses of Exalgin, Antipyrin, or Phenacetin, and when these fail the excruciating agony caused by the greatly increased intracranial pressure may be relieved by trephining the skull.

ACTINOMYCOSIS.

Preventive measures are obvious, since the disease is always caused by the introduction of the ray fungus, which flourishes upon barley, oats, and other cereals, and often finds its way into the respiratory and alimentary tract, through the chewing of raw grain or straws, or through abrasion or punctures of the healthy skin caused by the awns of the grain.

The detection of the tumour with its characteristic contents should decide at once in favour of radical surgical procedures. A free incision should be made, and after the evacuation of the contents every trace of infected tissue should be excised, curetted, or destroyed by the cautery, and the surrounding structures flushed by antiseptic solutions. Where the lower jaw or the hollow facial bones are involved the gouge, chisel, and saw may be brought into requisition, and after the removal of all infected osseous tissue a strong caustic should be applied, the cavity being firmly packed with iodoform gauze so as to insure healing from the bottom.

Iodides possess a strong selective action over the fungus, and should invariably be administered at the same time for considerable periods as in tertiary syphilis, 30-60 grs. of the sodium salt being given thrice daily. Where the fungus cannot be reached by surgical methods, this drug has often proved efficacious when given for months in the above dosage with short intermissions. The intravenous injection of Colloid Silver or Collargol in 2 per cent. solution has been advocated in pulmonary and abdominal cases. The newer preparation—Lysargin—will probably be

found more suitable in 5 c.c. doses of a 10 per cent. solution. The X rays have also proved valuable in some cases, but their use should not be depended upon except as an adjuvant to surgical methods and iodide treatment. The iodide has been injected into the nodules in the tongue and in facial cases, and the method of cataphoresis has been employed afterwards with success, no deformity being produced.

ADDISON'S DISEASE.

Very often the administration of Suprarenal Gland Extract produces no effect whatever upon the progress of this disease; nevertheless, since there is no other agent which exerts any specific action, it always should be given as a routine procedure, because undoubtedly, in a small percentage of cases, marked permanent benefit has been obtained. In the late stages of the affection it nearly always fails to raise the blood-pressure, but when the disease is recognised at an early stage better results may be expected. The dried extract may be given in 1-gr. tablets, each of which corresponds to 15 grs. of the fresh gland; 4 of these may be given in the 24 hours. The writer believes that the drug should be commenced in smaller doses at shorter intervals—*i.e.*, half a tablet every 2 or 3 hours, and the dose increased steadily till up to 2½ grs. of the dried substance be taken every 3 hours. Hypodermic injection of Adrenalin may be resorted to when the gastric irritability is very prominent, or 1 dr. of the raw or partially cooked medullary portion of the sheep's gland may be administered, as its efficacy is but slightly diminished by the action of the gastric juice, and it is readily absorbed by the rectal mucous membrane.

Much may be achieved by symptomatic treatment in other directions, and the life of the patient may be prolonged by complete rest in the horizontal position, and the use of Bismuth combined with small doses of Morphia or Hydrocyanic Acid, or minim capsules of Creosote to check the exhausting vomiting, which is usually a prominent feature in the later stages of the disease. The profound anæmia is sometimes relieved by Cacodylate of Sodium given *per rectum*, and the tendency to syncope is lessened by small hypodermic doses of Strychnine or Digitalin. The best article of diet at this stage is buttermilk diluted with an equal quantity of effervescing kali water in small and frequently repeated amounts. Constipation is best combated by enemata of tepid water. Open-air treatment, when practicable, is beneficial in all cases.

ADENOIDS.

The presence of these hypertrophied masses of lymphoid tissue should be regarded as an indication for speedy surgical interference, notwithstanding their tendency to wither or atrophy as the child grows older, since by waiting, incurable deafness,

post-nasal catarrh, chest deformity, and alteration of the normal voice may supervene.

The choice of an anæsthetic is of primary importance ; Chloride of Ethyl is sometimes used, but a few specialists regard it as dangerous and refuse to employ it. Chloroform has its detractors, but in the hands of a skilful anæsthetist it or the A.C.E. mixture is perhaps the most convenient and safe agent if only a moderate degree of anæsthesia be induced. Where the tonsils do not require removal, and the adenoids are not extensive, gas with oxygen is sometimes admissible. Many operators prefer to dispense with general anæsthesia and rely upon Cocaine, or large doses of Bromides given for several days before the operation so as to induce anæsthesia of the pharynx, and some prefer to operate without any form of narcosis being induced. The patient's head should be made to project just beyond the edge of the operating-table, so that on depressing the forehead the blood may flow into the buccal cavity and out through the angle of the mouth.

Anæsthesia being produced, short of not quite abolishing the palatal reflex, and a gag having been introduced between the teeth, the operator's left forefinger is passed into the naso-pharynx, its palmar surface being kept upwards and the soft palate hooked forwards by it. Loewenberg's forceps are then introduced and the growths seized one by one and completely removed, or the operation may be completed by the use of Meyer's ring-knife, which enables the operator to sweep the roof of the cavity and enucleate all abnormal tissue in proximity to the entrances of the Eustachian tubes. Some operators prefer the use of Gottstein's curette, but this should not be solely relied upon else some of the growths are certain to escape enucleation ; and some operators still rely upon the use of the sterilised finger-nail for the removal of remnants. After the complete removal of the lymphoid tissue, as ascertained by the finger-tip, the tonsils should be next excised when these are markedly enlarged. The less swabbing and syringing the better, the after-treatment of the case being left to nature unless when excessive hæmorrhage should occur, which may be arrested by the local application of Adrenalin when imperatively necessary. Breathing exercises should be afterwards systematically carried out so as to cause full expansion of the thoracic walls by taking deep inspirations through the nostrils with the mouth closed, assisted by pressure upon the lower ribs in the expiratory effort.

During convalescence removal to the seaside with a course of open-air life and Syrup of Iodide of Iron is beneficial.

AIR PASSAGES, FOREIGN BODIES IN.

Owing to the danger of direct suffocation or the probable advent of reflex spasm, no time should be lost in removing any body lodged in the larynx without waiting for its exact location

by the X rays. When time permits thoroughly cocaineise the pharynx and larynx, then pass the index-finger into the throat, and if the substance is lodged about the entrance of the larynx it may be removed by forceps or fingers. Where the foreign body has entered the larynx, in the absence of spasm it may be removed by forceps guided through the aid of the laryngeal mirror. Where these attempts fail, *laryngotomy* must be immediately performed when the symptoms are acute, and this can be readily accomplished with any cutting instrument at hand by making a vertical incision about 1 inch long in the middle line between the sterno-hyoid muscles, and a transverse incision through the crico-thyroid membrane, which can be easily felt through the skin; subhyoid pharyngotomy, thyrotomy, or tracheotomy may be performed.

When the impacted body cannot be extracted through the wound, it may be pushed up into the pharynx and removed through the mouth.

Where the foreign body has passed into the trachea or bronchi the first step is to try inversion, but this should never be done unless everything is in readiness for opening the trachea, as there is great danger of the body becoming lodged in the glottis and causing sudden death, and when this fails, as is generally the case, the surgeon should perform *tracheotomy*, making an unusually free incision through the tracheal walls, which should be held widely separate by hooks to facilitate the expulsion of the offending substance. This may be hastened by inverting the body and applying a smart slap with the open hand between the shoulders.

When the foreign substance does not come through the tracheal wound or through the glottis, gentle efforts may be made to remove it by a loop of fine wire passed into the trachea, or by forceps. Should this fail the tracheal wound must be kept open by silk threads passed through its edges and tied round the neck, when the surgeon can afford to wait a few days, since the opening in the trachea removes any immediate danger of suffocation. Afterwards forceps may be introduced through a Killian's tracheal tube passed into the tracheal wound.

Foreign bodies in the gullet are removed by the methods detailed under Oesophagus.

ALBUMINURIA.

In the majority of cases the treatment of this condition resolves itself into the management of Bright's Disease (which see). In those cases where albumin appears in the urine, apparently independent of renal disease, it may (speaking generally) be said to be in such small amount as not to call for any special treatment. Where, however, more than a trace is pretty constantly detected, the physician should determine the *cause* and treat it. If, as is common, the albumin appears as the result of de-

fective assimilation of albuminoids, attention should be at once directed to the state of the digestive organs, and especially the liver; and there is no more potent remedy in such cases than a strictly milk diet, with or without Pepsin. Home-made Koumiss, prepared by mixing $\frac{1}{2}$ pint of water, $\frac{1}{2}$ pint of butter-milk, and 4 pints of Fresh Milk, and 1 oz. Loaf Sugar, leaving in a warm place and shaking occasionally for 36 hours, will make a palatable food, very suitable in many cases. Albuminuria occurring during febrile attacks, zymotic diseases, inflammatory affections, &c., will yield to the remedies suitable for the primary disorder. When depending upon obstruction to the circulation, as in valvular affections or cirrhosis, the albumin will disappear upon the removal of the cause when possible. Cardiac tonics and diuretics, by strengthening the heart muscle and stimulating the renal bloodvessels, may cause its disappearance. The wet pack is very serviceable in such cases.

Arsenic and Iron, separately or combined, are of great value in the treatment of chronic albuminuria, especially when the drain of albumin has produced a marked effect upon the blood. Iron affords the best results in albuminuria depending upon a morbid state of the blood, as in scurvy, pyæmia, and hospital gangrene.

The *albuminuria of adolescence*, or so-called *intermittent, cyclic, orthostatic, or functional* albuminuria, generally yields readily to rest in bed and a strict milk diet for a few weeks. In those cases where the albumin appears after physical exercise, Yeo lays stress upon the importance of limiting this to several very short walks, and forbids all athletics and animal food. Sexual excesses, smoking, overfeeding, brain-worry, exposure to cold, and other possible causes must be guarded against. It is hardly necessary to remind the student that albuminuria depending upon discharges finding their way into the urine from the urethra, prostate, bladder, or pelvis of the kidney, can only be treated by surgical methods directed to the diseased conditions in these localities.

As a rule, the broad statement may be accepted as true that no drug possesses the specific power of markedly causing diminution in the quantity of albumin, and it is better for the physician to attack the cause than to lose time in administering the usual list of mineral and vegetable astringents. Moreover, some authorities affirm that their use is positively injurious. Lactate or Chloride of Calcium sometimes, however, appears to lessen slightly the amount of albumin in cyclic and anæmic cases, and it may always have a trial, but the long list of drugs vaunted for this purpose, including strontium, gold, silver, and lead salts, may be ignored. Pflanz has published a series of statistics which seem to prove that the sulphate waters of Marienbad possess the power of markedly diminishing the amount of albumin.

The albuminuria of pregnancy, when slight or transient, does not call for medication; when persisting and copious, it may be safely dealt with as if occurring in Bright's Disease (which see).

ALCOHOLISM.

The treatment of acute alcoholic poisoning will be found under Poisoning. The *preventive* treatment of drunkenness is a wide and serious question ; and, notwithstanding the heroic attempts of philanthropists and the activity of temperance reformers, the exhaustless literature of the subject, and the introduction of costly and cumbrous State machinery, little or nothing seems to have been accomplished, when one considers the terrible importance of the issues. Though the writer is very conscious that a great problem like this cannot be discussed in a Handbook of Treatment, nevertheless he cannot refrain from stating his conviction—the result of years of observation upon the action of alcohol—that it is possible for vast and far-reaching results to be obtained by a State regulation of the strength of all distilled alcoholic liquids to be used as beverages.

If distilled spirits could only be procurable in alcoholic strength, say, of sherry (15 per cent.), or, better still, of claret, more progress would be made in the amelioration of the evils of the drink curse than in all the temperance legislation of the last century. The benefits would be at once obvious in the great manufacturing centres where alcohol is largely consumed in a concentrated form. The writer is satisfied that the consumption of spirits in a strong or only slightly diluted condition enormously increases the danger of the establishment of the alcohol habit in its worst forms, and enormously increases the injury to the tissues and glands of the body. The difficulty in carrying out such a law would be great at first, and might seriously interfere with Exchequer returns, but the gain to the nation would be obvious. The increase in the productive power of labour would be immediate, and the diminution in the expense of the maintenance of the huge army of useless victims of alcoholic excess would in some years be no less certain. It is true that such a measure would probably increase the evils of beer and wine drinking, but the gain to Ireland, Scotland, and many manufacturing centres in England of the diminution in drunkenness would be certainly very great.

Much good might be done in the way of reclamation of the confirmed inebriate by a thorough and whole hearted administration of the 1898 Inebriate Act, if only a clause could be added to this Act which would make it applicable to habitual drunkards who had not committed any other indictable offence. As the law at present stands, the blessing of a three years' compulsory sojourn in an inebriate reformatory can only be purchased by the habitual drunkard who becomes a criminal or one who has been found guilty of some indictable offence. The moral treatment during a prolonged detention of at least one year in a well-conducted inebriate asylum would give a vastly higher percentage of recoveries than can be expected from asylum treatment of the ordinary insane, and it must also be remembered

that a fair proportion of the worst types of hopeless insanity arises from alcoholism. The ridiculously short sentences passed upon the ordinary drunkard who commits misdemeanours and minor crimes permit of no real improvement of his moral condition during the brief term of his imprisonment, and often eventuate in changing the occasional into a confirmed habitual alcoholic. In the acute stage of drunkenness, falling short of alcoholic poisoning, the physician may be called upon to administer a remedy to counteract rapidly the symptoms of alcohol. The Solution of Acetate of Ammonia, in doses of a wineglassful every 15 minutes, will often cause the uproarious or maudlin stage of drunkenness to give place to a condition of perfect sobriety in a surprisingly short time. 1 dr. of Carbonate of Ammonia, dissolved in 2 ozs. Vinegar, makes an efficient substitute.

The hypodermic injection of $\frac{1}{8}$ - $\frac{1}{2}$ gr. Pilocarpine will act with equal rapidity, and it can be administered when the patient refuses, or even when he is unable, to swallow the bulky, unpleasant solution. Cocaine, Kola Nut, Caffeine, and very strong Coffee, produce somewhat similar results, but much more slowly and less satisfactorily.

Acute gastritis following a debauch, and leading to serious vomiting, is best met by a large blister over the stomach, and by the administration of small quantities of ice by the mouth, and Morphia hypodermically, or by the following mixture :

R. *Bismuthi Carb.* *ʒij.*
 Acid. Hydrocyan. Dil. *min. xlv.*
 Mucilag. Recentis *ʒiss.*
 Liquor. Morphinæ *ʒij.*
 Aquæ Chloroformi *ad ʒiv. Misce.*

Fiat mistura. Capiat cochleare min. omni hora, p.p.a.

Lavage may be resorted to if there be no collapse or severe pain, the stomach being washed out with 40 oz. water, in which 5-10 mins. of Creosote have been dissolved. In the chronic vomiting, Creosote capsules, $\frac{1}{16}$ gr. of Morphia in minute pill, or minim doses of Fowler's Solution, or 10 grs. Bismuth and 5 grs. Heavy Magnesia, may be given. The writer has often seen vomiting stop after 10 to 15 min. doses of Tincture of Capsicum, which had been given to allay the craving. By far the best food at this stage is good buttermilk turned acid, and if very acid it can be freely given with kali water, and this combination may stop vomiting which has resisted all treatment. The fluid known in Ireland as buttermilk differs widely from the vile compound known by the same name in most parts of England, where only the cream and not the entire bulk of the cow's milk is churned.

For the relief of intense thirst there is nothing so efficacious as a beverage of acid buttermilk and kali water in equal proportions.

The chronic dyspepsia of drunkards is a troublesome affection, in which drugs are of little value. The great difficulty experienced by the physician is to select some form of liquid nourishment which can be taken copiously by the patient at short intervals, which will be easily digested and acceptable to the vitiated palate. There is nothing better than the buttermilk just mentioned, which may be given in unlimited amount. It may be administered every 15 or 30 minutes, either alone or mixed in equal quantity with fresh milk, soda, or kali water. The formula mentioned upon p. 18 for preparing artificial koumiss will make a palatable and nutritious liquid. The writer has been informed by a medical man who had successfully overcome the alcohol habit in his own person, and has had considerable experience in treating others, that he found great assistance from the variety of the "Hop Bitters" which contains no alcohol. Carefully prepared beef tea and chicken soup, either of which can be thickened with barley water, and fortified with Liebig's Extract of Meat, or ordinary clear or thick soup of any kind that the patient may fancy, can be freely given. If there be great weakness or prostration, and the stomach refuses to accept any nourishment, except in very small quantity, Bovril, Valentine's Meat Juice in drachm doses every half-hour, or Brand's Beef Jelly, with ice every hour, affords the best chance of tiding over the difficulty. Associated with gastric symptoms is the intense craving for alcohol in some form. This should be stoutly withheld. The physician generally sees the patient after he has been indulging freely for a considerable period, and alarm has been excited by the depression produced by continuous vomiting or by the dread of delirium tremens. The serious difficulty which at once confronts the attendant is the responsibility of cutting off the stimulant. There is a deeply rooted prejudice against this line of action, held both by the unfortunate victim and his friends, and, if such a step be taken, any mishap occurring is sure to be attributed to this point in the treatment.

In the vast majority of cases this is the correct course to pursue. The experience of gaol surgeons proves how constantly immediate improvement sets in, and how exceedingly rarely does any mischief follow the abrupt withdrawal of stimulants, even in the breakdown patients committed to prison for some act perpetrated during their prolonged debauch.

This prejudice has, to a large extent, arisen from the aversion to alcohol often noticed in patients just before symptoms of delirium tremens set in at the end of a drinking bout. The supervention of the delirium is attributed to the cessation of stimulation, whilst, in reality, it is but a symptom of the disease. The prejudice is also traceable to the memory of the horror and depression caused by the cutting off of the stimulant in former attacks, and the

patient is generally loud in his protestations that death will follow the sudden withdrawal of his liquor.

Though the physician should act firmly in insisting upon this complete withdrawal, he will be wise to postpone it for a short time if he has good reason to suspect that symptoms of delirium tremens are about to immediately declare themselves.

Exception should be made in those very much debilitated from disease, especially in those suffering from heart affections, and in the aged. If the pulse should exhibit marked signs of weakness and irregularity, if there has been prolonged insomnia, or if the history of the patient shows clearly that he has for years been taking alcohol in moderate doses daily before his recent excess, then small regulated doses of alcohol should be administered to him at stated intervals, the dose to be porportional to his habits. Generally speaking, 12 oz. of whiskey should be rarely permitted during the 24 hours, and 6 oz. for all cases may be said to be a fair allowance during the first few days, though the patient may have been in the habit of taking much larger quantities.

If there is much gastric irritability Champagne may be given, but all other wines should be forbidden. Good whiskey alone being selected as the stimulant, the rule should be laid down that it must be taken by the patient mixed with his soup or milk by a reliable nurse.

In the great majority of instances, however, the physician when called to treat a case of chronic alcoholic poisoning will be safe in fearlessly acting as he would in any other case of poisoning—by immediately preventing the administration of the poison. Much can be done with the assistance of a firm nurse, who should administer liquid nourishment every 15 or 30 minutes.

The following may be given with benefit to allay the craving for alcohol, and to some extent it takes its place :

R. 1 *Spt. Ammon. Aromat. ad* ʒiv.

Tinct. Cinchonæ ʒij.

Liquor. Strychninæ Hyd. ʒj.

Tinct. Capsici ʒj. *Misce.*

Fiat mistura. Sig.—"A large teaspoonful in half a tumblerful of effervescing potash water every hour."

Or the following may be tried :—*Ext. Cocæ Liq.*, 2 oz. ; *Tinct. Card. Co.*, 2 oz. ; *Tinct. Cinnamom.*, 1 oz.—one teaspoonful every hour in water.

Or the following :—*Tinct. Jaborandi*, 5 drs. ; *Tinct. Chirataë*, 2 oz. ; *Aquæ ad* 20 oz.—one dessertspoonful every quarter of an hour.

Attention has of late years been directed to the value of Strychnine and Nux Vomica in the treatment of alcoholism and

delirium tremens. The author first pointed out in 1882 the striking effects of alcohol in Strychnine poisoning, and published a case where recovery followed after the failure of the recognised remedies. He is satisfied that strychnine is a remedy of great value acting as an antagonist to alcohol, and he finds that it affords the best results of all drug treatments in diminishing the craving for alcohol and preventing the depression following its withdrawal. In all cases it should be pushed, and though relapses occur as a rule, the physician can depend upon it in helping the patient till moral influences have time to operate in his reform. The drug may be given hypodermically ($\frac{1}{32}$ gr.), while smaller doses are administered by the mouth. Many permanently successful results follow the methodic injection of Strychnine along with Atropine, in doses so regulated as cautiously to induce mild physiological action of both drugs for a couple of weeks, but this treatment can only be properly carried out in combination with restraint in a fully equipped sanatorium under the personal supervision of a skilled physician. Many so-called "Alcohol Cures" contain Strychnine, some contain Brucine, Gold Salts, and Atropine, but the majority contain large percentages of Alcohol. (When the habitual drunkard has committed an indictable offence, under the Inebriate Act he can be sent to a State Inebriate Reformatory for a period not exceeding three years, where all difficulties in the carrying out of reformation are reduced to a minimum.)

Coca leaves and Quassia chips may be chewed during the intervals between food and medicine.

After the relief of the more acute symptoms, tonics, as Quinine with a Mineral Acid and Gentian and Calumba, may be given. If the gastric symptoms continue after the disappearance of the craving, Bismuth or Oxide of Zinc, with a minute dose of Morphine, $\frac{1}{20}$ gr., may be given; or, Pot. Bicarb., 1 oz.; Aquæ Laurocerasi, 6 drs.; Aquæ to 12 oz.—a tablespoonful, with an equal quantity of fresh lemon juice, every 2 hours.

For the persistent loss of appetite and want of energy, associated with restlessness and disturbed sleep, sometimes with traces of hallucinations following long after prolonged alcoholic excess, there is no better remedy than the following:

R. *Quininæ Hydroch.* gr. xxv.
 Acid. Nitro-Hyd. Dil. ʒvj.
 Ext. Cinchonæ Liq. ʒiij.
 Aquæ Destillatæ ad ʒxx. *Misce.*

Fiat mistura. Capt. coch. mag. ter die ex aqua ante cib.

For the *insomnia* of chronic alcoholism, Opium should be sparingly employed. Bromides may be freely and continuously employed, and 10 to 30 grs. may be given in conjunction with

any of the above combinations. It is a good plan to give the Bromide of Potassium in doses, say, of 20 grs. every 4 or 6 hours, alternating with the Sal Volatile and Capsicum Mixture. Trional, Sulphonal, Veronal, Paraldehyde, and Hyoscine are all safe and useful. Chloral should never be trusted, owing to its dangerous depressing action upon the heart. (For the treatment of insomnia in delirium tremens, see under Delirium Tremens and Insomnia.) Long after alcoholic excess has terminated in the condition requiring the treatment mentioned in the previous pages, the patient should be seriously cautioned, and, if necessary, placed under mild restraint, and if the craving continues, and the will be unable to resist it, restraint should be insisted upon, and a residence in a good inebriate asylum be strongly advised for as long a period as possible. Hypnotism has been extolled, but the writer has no experience of its use.

Dipsomania or *Oinomania* must not be confused with ordinary inebriety. The mental or psychic element must be always before the mind of the physician when dealing with this disorder, and its victim must be treated and assisted as if he were the subject of a neurosis or degeneration either inherited or acquired. The treatment between the attacks will resolve itself into such alteration in the environment of the patient, his habits, exercise, food, and morals as will tend to improve his physical condition, strengthen his will power, and elevate his moral sense. The management of the case during or immediately after the drinking bout will be that indicated in ordinary acute drunkenness. The plan of tapering down gradually the quantity of alcohol or of mixing it with nauseating expectorants is to be condemned. In the hands of Dr. M. Bramwell hypnotic suggestion in these cases has given marked and satisfactory results, but the greatest care must be exercised to prevent this subtle agent being employed to the extent of causing diminution of will power or loss of the patient's sense of self-respect. In every case permanent total abstinence from all forms of alcoholic beverage must be rigidly insisted upon.

The treatment of the various diseases and conditions following upon chronic alcoholism may be found under Cirrhosis, Delirium Tremens, &c.

ALOPECIA—See Baldness.

AMBLYOPIA, Toxic.

The most common cause of this condition, which is also known amongst ophthalmic surgeons as Central Scotoma, is *tobacco*. As soon as the first symptom (which is commonly that of a sudden and progressive dimness of vision) leads the patient to seek advice, and the diagnosis being clear, total abstinence from the use of tobacco in every form must be rigidly insisted upon. This in most cases will effect a speedy cure without resorting to drugs, but where the disease has been of long standing patient treatment

prolonged over many weeks may be necessary. If, on examination of the disc in such cases, it is found to be already blanched and atrophied, drugs can only be expected to restore the acuity of the periphery, the central vision remaining permanently damaged in both eyes. Strychnine hypodermically is the only reliable drug; $\frac{1}{20}$ gr. should be injected daily into the temple region till symptoms of improvement begin to manifest themselves, after which the alkaloid can be given by the mouth. Iodide of Potassium assists its action, and should be administered three or four times a day whilst the hypodermic treatment is being carried out. Where the condition fails to respond to these measures, Pilocarpine may be injected, and Phosphorus in small doses administered at the same time by the mouth. Eliminatory treatment consisting in large draughts of water and free open-air exercises is also to be recommended, but they are only of use in recent cases.

The patient, if a confirmed slave to the smoking habit, may be aided in his abstinence by being allowed to chew small fragments of Quassia wood or of Calumba or Gentian when the craving for a smoke is acutely felt.

Alcohol is not an uncommon cause of amblyopia, but it is rarely met with alone, being frequently seen as an aggravating factor in tobacco scotoma; hence in every case of the latter the use of alcohol in every form must be strictly prohibited, and often no improvement in treatment results till this is given up completely.

Sometimes good results may be obtained in acute severe cases of the combined toxæmia by leeching the temples, and in very chronic cases by the administration of Chloride of Gold.

Quinine, Bisulphide of Carbon, Arsenic, Lead, Dinitro-benzol, Filix Mas, Indian Hemp, Stramonium, Iodoform, and Purified Wood Alcohol also produce the condition, and must be treated on the same lines. The worst type of toxic amblyopia has unfortunately become common through the introduction of the craze for treating syphilis hypodermically by large doses of the new arsenical compounds, especially Atoxyl or Arsamin. In this type the amblyopia is prone to pass into total blindness or amaurosis, a condition also often seen in sleeping sickness when these drugs have been administered.

The amblyopia of pregnancy and acute Bright's disease should be treated vigorously by hot baths, Pilocarpine, and saline purgatives.

AMENORRHŒA.

The practitioner should always remember that amenorrhœa is a *symptom*, and not a *disease*, and that it is useless, and may be harmful, to give drugs for the purpose of evoking a menstrual flow, unless the cause which is responsible for its non-appearance or suppression is discovered and dealt with if need be.

Delay in the first appearance of menstruation need excite no alarm unless a periodic malaise has been noted without any corresponding discharge from the vagina. It is in many cases due to constitutional causes which defy analysis, and the anxious mother may be reassured, while the patient, if of weakly habit and poor development, should be given a tonic such as

R. *Ferri et Quinin. Cit.* ʒj.
Inf. Calumbæ ad ʒvj. *Misce.*

Ft. mistura. Cpt. ʒss. ter in die post cibos.

or

R. *Mist. Ferri Co.*
Decoct. Aloes Co. āā ʒiv.

Ft. mistura. Cpt. ʒss. ter in die post cib. ex aquâ.

A mixture of equal parts of Fellows' and Parrish's Syrups in teaspoonful doses is often of advantage. Where iron disagrees Hommel's Hæmatogen may be given. Attention should be paid to personal hygiene. Warm clothing, abundant plain nutritious food should be insisted on, and the patient should be instructed to go to bed early, have at least ten hours sleep, with plenty of fresh air and not too much exercise. In the rare cases where thyroid insufficiency can be diagnosed, the tablets of the dried gland may be prescribed, commencing with 5 grs. once a day and carefully increasing the dose. The drug should be stopped on the appearance of unpleasant symptoms, such as loss of weight, headaches, and flushings. If examination of the young patient reveals the presence of a disease such as tubercle, cardiac or renal trouble, the treatment appropriate to the affection is of course indicated.

Should the patient give a history of periodical abdominal pains and malaise, although no menstrual flow has ever been noted, it is advisable that she should be examined as soon as possible, preferably under an anæsthetic, as there is a strong presumption that some form of genital atresia is present, which will require operative interference.

The most usual form of atresia found is *occlusion of the hymen*. The operation for the relief of this obstruction is simple of performance, but the results are likely to be so disastrous owing to the liability to sepsis, that unless the practitioner is fully persuaded of his ability to perform the operation aseptically, and to keep the parts aseptical afterwards, he will be wise in calling in the assistance of a specialist. The vulva should be washed and shaved, and plentifully douched with an antiseptic lotion of 1 in 4,000 perchloride, or drachm to the pint lysol, cyllin, or other coal-tar antiseptic. A crucial incision should be made in the bulging hymeneal membrane. The freer the incision the better,

as a small opening allows of the retained menstrual fluid becoming septic while it hinders it flowing away. The tarry fluid should be washed out of the vagina with an antiseptic fluid through a double current catheter (Bozemann's), which should afterwards be introduced into the uterus if its cavity is also distended with retained blood. When the vagina and uterus have been emptied, they should be packed lightly with iodoform gauze, wrung out of an antiseptic solution. The gauze may be left in place for three or four days, and after its removal an antiseptic vaginal douche should be administered twice a day for a week.

Should atresia of the vagina or cervix be discovered on examination, the operation necessary to relieve the condition requires a more difficult and consequently more dangerous dissection, during which the same antiseptic precautions must be observed. In such cases the after-treatment presents the difficulty that there is a great tendency for the artificial passage to contract, and the passage of suitable dilators is therefore almost a necessity.

In rare instances it will be found that the delay in the onset of menstruation is due to a failure of development of the genital organs. Should the entire genital apparatus, including the ovaries, be rudimentary, nothing can of course be done. In the more common form, where the ovaries are present but the uterus or uterus and vagina are rudimentary, dysmenorrhœa, or rather attacks of periodical pain without a menstrual discharge, are likely to ensue, and to become worse as time goes on; such cases often require ultimately the removal of the ovaries to relieve the pain.

When the young patient has menstruated a few times in the ordinary way, and the menses have then ceased to appear, the facies of the girl will in most cases lead the physician to the diagnosis and to the appropriate treatment. The vast majority of such patients suffer from *chlorosis*, and the main lines of treatment may be summed up as *iron, rest, and feeding*. For such a condition Blaud's pill is of course an old favourite. It is perhaps best administered as a "Bipalatinoid," which insures the administration of a fresh iron salt to the patient. I have much faith in a combination of Iron and Arsenic, such as the following :

R. *Ferri et Ammon. Cit.* ʒj.

Liq. Fowleri ʒss.

Inf. Calumbæ ad ʒvj. *Misce.*

Ft. mistura. Cpt. ʒss. ter die post cibos.

The combined citrates of Iron and Manganese may be given in 5-gr. doses, or the mixture of Decoct. Aloes and Mist. Ferri mentioned above may be prescribed. No treatment of chlorosis which does not take account of the constipation almost invariably present can be considered satisfactory. In my experience the best routine prescription is some form of saline. This may take

the form of a wineglassful of Apenta, Friedrichshall, Hunyadi, or other aperient mineral in a tumbler of warm water half an hour before breakfast, or of Carlsbad, Krüschén, or any other fashionable salt, or of what is equally efficacious and much cheaper, 1 or 2 teaspoonfuls of Epsom or Rochelle salts in a tumbler of warm water. Any of these saline aperients should be prescribed with due regard to the result, and the patient should be instructed to gauge her dose so as to obtain one free motion in the day, the amount taken being regulated to this end.

It is a mistake to prescribe much exercise for chlorotic girls. They should have plenty of open air and of sun whenever it can be got, but they should be encouraged not only to spend a ten-hours' night in bed, but to rest during the day as well. It is wiser to drop all active employment; if the patient is at school she should be given a year's holiday, or at least six months. Her clothing should be warm, and she should have abundant plain, wholesome food. Fresh meat, ripe fruit, and green vegetables should be insisted on. Further suggestions as to treatment will be found in the section on Anæmia.

A careful physical examination may disclose the presence of tuberculous disease, or cardiac or renal trouble, and the treatment appropriate to the affection should be instituted. When a patient who appears otherwise healthy comes to a physician with a history of amenorrhœa after menstruation has once become established, the possibility of pregnancy should never be forgotten, no matter what her social position. It is not necessary to insist on a vaginal examination to determine this point, as after the third month the uterus can be made out as an abdominal tumour, and the breasts afford corroborative evidence. Unless the diagnosis is unequivocal, it is best to give a placebo, and ask for a re-examination in the course of a month, when the increased size of the uterus, if pregnant, will place the matter beyond a doubt.

Later on in life the causes of amenorrhœa, and consequently the treatment, vary. Most prominent is the amenorrhœa of pregnancy and lactation, and it should not be forgotten that even after the cessation of lactation menstruation may fail to become re-established for some months. Sometimes after labour the normal involution of the uterus goes too far, and the uterus becomes smaller than normal, with complete cessation of the menstrual flow (hyperinvolution). For this condition there is unfortunately no cure.

Any loss of blood profuse enough to cause a secondary anæmia may be followed by amenorrhœa, which will be cured when appropriate measures are taken to restore the blood to the normal.

Sometimes the presence of an ovarian tumour or tumours leads to scanty menstruation, or even to amenorrhœa, but the absence of the menstrual flow is of small account compared to the more important disease present.

The menopause in rare cases comes on before the fortieth year. Nothing can be done to retard it, and the treatment appropriate for that time of life should be instituted.

I have entirely omitted to give a list of emmenagogues. Such drugs can find no place in the modern physician's armamentarium. Amenorrhœa is a symptom ; its cause should be found and treated, and a drug which is professedly used merely to induce a menstrual flow should be regarded as at best superfluous, and at the worst as distinctly harmful, and possibly criminal when used indiscriminately.—R. J. J.

AMYLOID DISEASE—See **Liver, Diseases of, and Bright's Disease.**

ANÆMIA.

The modern view, as maintained by Hunter and others, of the septic nature of the group of affections labelled as "anæmia" has caused greater importance to be attached to the prevention and the treatment of infective processes arising from unhealthy conditions of the mouth and alimentary canal. The classification of anæmias into Primary and Secondary is of little use to the therapist, since all are probably really secondary in nature, though it separates sharply the pernicious type from others, because the origin of the sepsis in the latter disease cannot be more than guessed at ; and some authorities place chlorosis in the primary group, whilst others insist upon its symptoms being entirely due to secondary factors, amongst which sepsis is held to play a more or less prominent part.

In most instances anæmia is but a symptom of many different diseases, and its treatment will necessarily imply a knowledge of the treatment of various diseases like albuminuria, syphilis, leucorrhœa, plumbism, hæmorrhoids, malaria, epistaxis, phthisis, gastritis, &c.

Where the anæmia is obviously due to loss of blood arising from venous or arterial leakage, the indications are clearly imperative—the hæmorrhage must when possible be instantly stopped by surgical methods, and the same remark applies to anæmia dependent upon the drain of albuminous discharges or excessive secretions. In acute traumatic anæmia the blood in the vascular system may urgently require to be augmented.

To meet this demand the older procedure of transfusing healthy blood into the patient's veins is giving way to the subcutaneous or intravenous injection of large quantities of normal saline solution. Defibrinated human blood is, however, still occasionally injected by a syringe into the basilic vein, and direct transfusion by connecting an artery in the arm of the donor with a vein in the patient's arm by a suitable mounted rubber-tube may be accomplished. Almost every advantage, without the dangers of the introduction of air, clots, and sepsis, is, however, obtainable by the injection of the warm saline solution in several

places into the loose areolar tissue. $\frac{1}{2}$ oz. Chloride of Sodium dissolved in 3 pints sterilised water may be injected at a temperature of 104° F. Glucose isotonic solution (5 per cent.) is used by Barker, and Trunccek's Serum consists of sodium chloride 492, sodium carbonate 21, potassium sulphate 40, and water 10,000 parts. A glass canula attached to 3 or 4 feet of rubber tubing with a funnel is the only apparatus required, or the aspirator may be employed.

Adrenalin Solution, 1 in 1,000, may be given hypodermically in 20-30 min. doses, alone or mixed with the saline. This is especially valuable in the acute anæmia of uterine hæmorrhage and when given by the mouth in direct bleeding from the stomach.

Chloride or Lactate of Calcium should be administered always in conjunction with the above treatment in the acute anæmia which arises from bleeding in purpura and allied blood conditions and whenever the bleeding-point is outside the reach of surgical measures.

The after-treatment is such as is applicable to the management of all types of secondary anæmia—*i.e.*, absolute rest, the administration of highly nutritious liquid foods at short intervals, and a most liberal supply of pure and fresh air. Necessary modifications in feeding are obvious when the anæmia arises from hæmatemesis, when rectal feeding will be required. Defibrinated human blood administered hypodermically has been recommended by Ziemssen, and ox blood may be given by the rectum.

Iron is to be given freely in all cases of secondary anæmia, its best effects being seen in the later stages after acute hæmorrhages. Notwithstanding the trumpeting of the host of new organic iron compounds the older inorganic preparations continue to hold their place. When it is necessary to saturate the blood rapidly with iron in all cases of acute anæmia due to hæmorrhage, the best preparation is the B.P. Tincture, the only exception being when the bleeding has been caused by gastric erosion.

As a simple chalybeate for this purpose the following is suitable :

R. *Tinct. Ferri Perchlor.* $\bar{3}v$.
 Potassii Chloratis $\bar{3}ij$.
 Glycerini $\bar{3}j$.
 Aquæ Chlorof. *ad* $\bar{3}xij$. *Misce.*

Fiat mistura. *Cpt.* $\bar{3}ss$. *ex* $\bar{3}ii$. *aquæ ter die p.c.*

In less acute cases where the tongue is coated it will be advisable to administer one or more saline purges, and substitute for the above, *Tr. Ferri Perchlor.*, $\bar{5}v$.; *Quininæ Hydrochlor.*, gr. xl.; *Glycerin.* $\bar{3}j$.; *Aquæ*, *ad* $\bar{3}iv$. $\bar{3}j$. *ter die p.c. ex* $\bar{3}ij$. *aquæ*, or the Citrate of Iron and Quinine may be given in 5-gr. doses in combination with 5 minims of Tincture of *Nux Vomica* in 1 oz. water.

In chronic anæmia, for saturating the blood with iron during

prolonged periods there is no preparation more suitable than Blaud's Pills, which may be given to the extent of 12 pills in the day, 3 being administered after each meal, and as a rule no constipation follows, and the discoloration of the teeth which is caused by the liquid preparations is avoided. The system can be also rapidly saturated by iron given in the form of pills containing 5 grs. Reduced Iron, which in gastric troubles may be coated with Keratin, so as to avoid stomach irritation; and it has been recently demonstrated that absorption of the metal takes place in the duodenum, its elimination occurring by the rectal mucosa. Stockman has obtained excellent results from the hypodermic administration of a solution of the Ammonio-citrate, thus proving the error of the older theory that iron only acted by permitting the absorption of the organic iron of the food in the intestine. Though the daily normal intake of iron does not exceed $\frac{1}{8}$ gr., and the total amount in the body is under 40 grs., the best results can only be obtained by giving much larger doses than can possibly be assimilated.

The treatment in all cases of anæmia, save the pernicious type (which will be referred to later on), should be conducted on the above lines, only, however, after attention has been given to the primary cause producing the drain upon the blood. The importance of oral and intestinal sepsis, overwork in every form, errors in digestion, improper food, impure air, and the action of poisons like lead need not be emphasised further. A form of profound anæmia which has become less uncommon since the return of the army occupied in South Africa should be specially mentioned, as this is liable to be overlooked (like the anæmia following duodenal ulcer). This type of bloodlessness is caused by the presence of ankylostoma duodenale, and may become so profound as to cause death unless the parasites are dislodged and killed by large doses of Thymol.

Malarial anæmia is often most intractable, and often fails to be remedied by iron. It is in this form of the disease that Arsenic proves so valuable, and it may to advantage be combined with Iron and Quinine, as in the following pill: Ferri Arsen., gr. $\frac{1}{8}$; Quinæ Sulph., gr. ij.; Ferri Redact., gr. ij. Misce. St. i. ter die p.c. Arsenic may, in the later stages of most secondary anæmias, and even in chlorosis, be advantageously combined with iron, though it cannot be said to possess the same specific action upon the hæmoglobin of the blood. The injection of Cacodylate compounds should be reserved for the pernicious and leukæmic types of anæmia.

In bloodlessness associated with neuralgia or nerve troubles the combination of quinine in large doses with small amounts of iron and arsenic is invaluable, or a teaspoonful of Easton or Fellows' Syrup may be administered thrice daily. The best routine preparation in the secondary anæmias of childhood is Parrish's Syrup in drachm doses, and where scrofula is present

there is no agent so uniformly useful as the B.P. Syrup of Iodide of Iron. In infantile anæmias a few drops of the B.P. Syr. Ferri Phosph. meet all requirements.

The chronic anæmia of Bright's disease is generally markedly relieved by the administration of the Acetate of Iron, and this can be conveniently prescribed by combining 20 mins. of the Tincture of the Perchloride with each drachm of Mindererus spirit and some glycerin in 1 oz. water. The anæmia so constantly present in chronic heart affections can be combated by the addition of Reduced Iron to Digitalis in pill form.

When anæmia is associated with obstinate constipation, the B.P. Pill of Aloes and Iron may be given in 5-gr. doses night and morning.

Where the irritable stomach objects to any of the above preparations, a very elegant combination is the Citrate of Iron and Ammonia given in effervescence with Citric Acid.

R. *Ferri et Ammon. Cit.* ʒij.

Acid. Citric. ʒiij.

Aquæ ʒviiij. *Misce.*

St. coch. mag. c. coch. mag. Mist. Alkaline ter die post cib.

The Alkaline Mixture contains Pot. Bicarb. ʒvj., Aquæ ʒviiij.

If headache follows the administration of iron, saline purgatives may enable the physician to continue its use, and he may give 5 grs. of the sulphate with 30 grs. of Sulphate of Magnesia in aerated water with advantage. The treatment of anæmia need not, however, be confined to the official preparations of iron if these do not soon prove satisfactory. The natural iron waters of Buxton, Kissingen, Altwasser, Harrogate, &c., may be tried with advantage, or any of the newer organic iron preparations may have a trial.

Glycerophosphates, Cod-Liver Oil, Lactophosphates, Malt Extract, sea bathing, bracing air, and sometimes a short sea voyage and rest from mental work, often work wonders. Massage is also a powerful remedy in improving nutrition and influencing metabolism, and water charged with oxygen gas has often proved serviceable.

The treatment of chlorosis, though identical with that of all secondary anæmias, will be dealt with under its own heading.

ANÆMIA, Pernicious.

Though the theory is gaining strength that this type of anæmia is due to hæmolysis, the result of toxins set free in the mouth, stomach, or intestines, it cannot be said that the therapeutics of the affection have advanced materially during the last decade. There is, however, every reason to believe that the disease is not so invariably fatal as was formerly believed provided that

treatment is vigorously taken in hand at an *early stage*, though many pessimists affirm that when a cure results there was necessarily a mistake made in the diagnosis.

Once the condition has been recognised, Arsenical treatment should be commenced without delay ; the administration of iron in most cases is not only futile but harmful, since it almost invariably increases the gastric irritability so constantly present. Hunter believes in small doses of arsenic, 6-9 mins. Fowler's Solution in the day ; most authorities regard such dosage as useless, and commence boldly with hypodermic doses of 1 gr. of Cacodylate of Sodium. Though Fraser has shown that cacodylates do not dissociate in the system, the arsenic ion being so firmly combined with the other cacodyl constituents that it is eliminated unchanged, nevertheless clinical evidence of the remarkable activity of the compound is indisputable. The writer can testify to the striking temporary success of the agent, especially when administered *per rectum*, as carried out by Dr. R. W. Leslie, even when every allowance is made for the natural tendency of the disease to assume an unexpected improvement from time to time. The usual method is to inject $\frac{3}{4}$ gr. of the soda salt daily for 10 days, and resume the treatment after weekly intervals. Arsy-codile acts in a similar manner, and Soamin, Arrhenal, and Arsamin have their advocates. Byrom Bramwell has reported very satisfactory results from Salvarsan administered by the intramuscular method.

The arsenical treatment having been started as a routine, the physician should proceed to meet other important indications present in every case, otherwise arsenic administration will certainly fail.

First amongst these is the febrile condition so constantly found in all severe cases. This must be met by *absolute rest in bed*, with the cessation of all mental exertion. The condition of the gastric function should next require attention, and the dietary must be closely supervised. As a rule small quantities of liquid food must be administered frequently, and milk with an effervescing water may be the only nourishment retained, and peptonisation may be tried. Soups, beef juices, and meat jellies are advantageous. Owing, however, to the remarkable capriciousness of the appetite in the disease, it is a mistake to insist upon a stereotyped dietary, and as the irritability of the stomach subsides a considerable degree of latitude may be permitted to the patient's instinctive longings for any particular article of diet. The writer finds Koumiss or acid buttermilk a valuable routine, and in the presence of actual vomiting this may be freely administered when mixed with Kali water. At a later stage, fish, chicken, and underdone fillet of beef may be permitted. *Bone Marrow*, raw or slightly cooked, should be freely given when the patient can tolerate it, or the tablets of this substance, highly recommended by Fraser, may be administered along with the food.

Concurrent with arsenical treatment, rest and dietetic regulations, antiseptic measures must be vigorously undertaken. The condition of the tongue, teeth and gums should be minutely investigated, all carious teeth must be extracted, gold crowns often conceal culture grounds, and where there is the least suspicion of this, their removal should be insisted upon. Frequent use of antiseptic mouth-washes is essential, or tablets of Formamint, which are both convenient and efficacious, may be employed.

Gastric sepsis is less easily dealt with. When the catarrhal symptoms indicate its presence, nothing is so efficacious as repeated *lavage*; but this is contraindicated often by the general debility existing. A compromise is usually practicable when vomiting persists. This may be carried out by inducing the patient after emesis has occurred to drink several tumblerfuls of tepid water containing small amounts of Potassium Permanganate in solution, which are soon rejected, and the operation may be repeated several times in the day, where lavage could only be attempted once in the 24 hours. Creosote, in the capsular form (2-5 mins.), is convenient and efficacious. Hunter extols Salicylic Acid, but the writer has found it too irritating. Capsules of freshly dried Charcoal are often of use. Those who hold with Crawitz that the absence of hydrochloric acid is the cause of the toxic condition recommend this drug as the best gastric disinfectant, but it has no antiseptic action in the ordinary medicinal dosage.

Intestinal sepsis should be combated, but here antiseptics are at the best a weak reed to lean upon. Salol and Beta-Naphthol are recommended, though their utility is doubtful; better results will be obtained by small doses of Calomel given at short intervals, though obviously this treatment cannot be persevered in for any length of time. Undoubtedly a morning smart saline purge will be beneficial, and this may be followed by a large evening enema to wash out the entire colon; constipation must be always avoided. Some authorities depend upon a strict milk diet for the disinfection of the bowel. Large doses of Salicylate of Bismuth are harmless and may be tried.

Cholesterin having been found to counteract the action of various vegetable poisons and animal toxins as strychnine and cobra poison its administration has been tried, but the results for so far are disappointing. After the disappearance of fever and the removal of acute gastric irritation the above combination of arsenical and antiseptic treatment with Red Bone Marrow may be continued whilst the patient is permitted to move about and take advantage of open air and change of scene. The advent of febrile attacks should be always a clear indication for complete rest, and in the later stages of the disease, cardiac weakness may demand hypodermic medication by strychnine, and sometimes oxygen inhalations may be advantageously

employed. Hunter strongly advocates the necessity of supplementing the above routine by Serum Therapy with the view of neutralising the poison in the blood and so preventing the active hæmolytic; for this purpose he injects Antistreptococcic Serum (5-10 c.c.) at intervals of three or four days for as many weeks, excellent results following when only 3 or 4 injections were employed. It is needless to state that all hæmorrhages from the mucous membranes should receive prompt attention, local astringents being applied when the bleeding is from the mouth or anus, and Chloride of Calcium administered for short periods in full doses. It is in this condition that Iron may sometimes be advantageously combined with the arsenic administered and occasionally transfusion may be demanded. Periodical blood-counts afford a reliable means of determining the results of treatment and should never be omitted.

ANÆMIA, Splenic.

The enlargement of the spleen without marked leucocytosis, which is characterised by progressive anæmia of the secondary type, is not benefited as a rule by the treatment which is sometimes successful in pernicious anæmia. The only remedy in this uniformly fatal condition consists in an early removal of the enlarged organ by the operation of Splenectomy, which has been successful in a small number of cases. In the condition known as Banti's Disease, where in addition to the primary splenomegaly and anæmia a cirrhotic state of the liver has been superimposed, the operation of Splenectomy is a serious one. All that can be done for the patient consists in the relief of his discomfort by tapping the ascites and the administration of Chloride of Calcium to lessen the tendency towards hæmorrhages from the stomach, bowel, or elsewhere.

ANCHYLOSTOMIASIS.

Preventive measures consist in absolute cleanliness of the skin and the sterilisation of all water and possibly contaminated food and the destruction of fæces. The parasite should be vigorously attacked by an anthelmintic administered after a smart purge has cleared out the contents of the intestines, and 8 or 10 hours after any food has been swallowed. Thymol has practically superseded all other remedies, but to be of any use it must be administered in doses far beyond the B.P. standard. 30 grs. of the crystalline thymol should be given in a cachet to the fasting patient and this dose repeated twice, at intervals of 2 hours each (90 grs. in all). Some authorities recommend one colossal dose of 60 grs. As a precaution against the absorption of the drug it is advisable to avoid the administration of any oily or fatty substance, though a small dose of Castor Oil can safely be administered 6 or 8 hours afterwards in order to expel the killed parasite, but upon the whole 5 grs. Calomel

will prove more efficacious. If, within a week or two, ova are detected in the fæces, the doses must be repeated as before. Daniels recommends the administration of 15 mins. Oil of Eucalyptus and 20 mins. Chloroform dissolved in 5 drs. Castor Oil after fasting, the dose to be repeated in one hour. Beta-Naphthol is believed to be less toxic than thymol and may be given in similar dosage. Manson reports favourably of Filix Mas in combination with Ether, but Thymol meets every requirement.

The after-treatment will embrace the administration of Iron, alone, or in combination with Arsenic, to combat the profound anæmia so constantly present.

ANEURISM.

The treatment of this affection is a wide subject, and since surgical methods, when these are admissible, should be undertaken only by experienced operators, their detailed discussion in a work like the present is unnecessary. The most radical and satisfactory surgical procedure which is suitable for nearly all small aneurisms, and in some cases carotid ones, is to make an incision over the sac for its entire length, apply a ligature to the proximal artery, which is then cut across and the sac dissected out, the distal vessel and any branches arising from the sac being securely tied at the same time, and the wound treated on the recognised antiseptic principles after the complete excision of the pulsating tumour.

A less formidable operation is by ligature ; this may be applied to the *proximal* side of the vessel close to the sac (Anel's operation), or at a distance on the proximal side (Hunter's method). Brasdor's plan of only ligaturing the *distal* trunk and Wardrop's practice of applying the ligature to one or more of the distal branches are still sometimes adopted with the view of causing coagulation in the distal end of the artery, which may finally lead to the solidification of the entire contents of the sac. In the plan of Antyllus the vessel is ligatured both above and below the sac in ruptured or bleeding aneurisms. The method of Matas by suturing the artery after opening the sac is a suitable one in arterio-venous tumours.

The introduction of coagulating agents like perchloride of iron directly into the sac has been abandoned owing to the danger of embolism and suppuration. Silver or gold wire, catgut and horsehair have been inserted in coils of considerable length with the same intention, and though not so dangerous as chemical coagulants this practice is not to be lightly undertaken, as already many mishaps have occurred. The method by Galvano-puncture has been pursued in cases of otherwise inoperable aneurisms, but with unpromising results. Two needles, with insulated stems, being inserted into the sac, the current is allowed to flow between their free points till coagulation is started.

Macewen's plan of treating large aneurisms, as those arising at the base of the neck and from the aorta in the chest and abdomen, gives somewhat more hopeful results than the latter-mentioned methods, and is less dangerous. It consists in the introduction deeply into the sac under strictest antiseptic precautions of a needle whose free point is then made to systematically touch and irritate the internal wall on the opposite side at many points so as to cause the deposition of white clot on the slightly inflamed or irritated surface. The needle being withdrawn and inserted into the opposite side of the sac the operation is repeated till the whole interior has been scratched. Pressure exercised by the fingers placed on the artery above the sac by relays of trained assistants, by tourniquets, padded splints, Esmarch's bandage, &c., has been practically abandoned; it is applicable to aneurisms in the limbs, which can be more safely and satisfactorily treated by other surgical methods under better control, and never should be undertaken except in the surgical wards of well-equipped institutions. It has sometimes been employed in the treatment of aneurisms of the abdominal aorta. Injections of Ergotin into the tissues around the sac with the view of causing condensation of the aneurismal walls is at best a most unsatisfactory plan and is liable to excite suppuration.

Injections of Gelatin into the subcutaneous tissue in some part of the body independent of the locality of the sac has in some cases effected the cure of large internal aneurisms beyond the reach of direct surgical measures. The rationale of the treatment consists in the power of the drug to increase the coagulability of the blood so as to favour lamination on the inner surface of the sac walls, especially in saccular aneurisms of the thoracic aorta where the current is languid. The only danger of this new method lies in the possibility of tetanus arising from the great difficulty inherent in the efficient sterilisation of gelatin solutions. 5 oz. (2 per cent.) solution may be injected anywhere into the loose areolar tissue every 4 or 6 days or double this amount of a 1 per cent. solution may be employed. One great advantage of this plan is that it may be combined with the following dietetic and rest method:

Tufnell's method, or the combined plan of Tufnell and Bellingham, commonly spoken of as the Medical treatment of aneurisms, first introduced by Valsalva, is often the only means of dealing with inoperable internal cases, though it has been successfully employed also in external cases. The chief element in this treatment consists in absolute rest in bed for a period varying from 3 to 6 months, the patient not being permitted to leave the horizontal position for a moment if possible, though he may be allowed to turn occasionally from side to side with slow determination, the object being, by mild starvation and rest, to so reduce the total amount of blood in his vessels and the force and frequency of the ventricular systole that the sac walls are less distended

and the deposition of fibrinous lamination is encouraged on their internal surface. Afterwards, by judiciously feeding, the blood is to be slowly enriched with the view of still further causing deposition of firm fibrin and of producing complete and permanent obliteration of the aneurismal dilatation. In plethoric subjects small quantities of blood were formerly extracted by repeated bleedings. The total allowance of solid food should not exceed 10 oz. daily, consisting of well-cooked meat or fish and biscuit, a similar weight of liquids being permitted. Bellingham's dietary consisted of bread and butter for breakfast 2 oz., meat and bread for dinner 2 oz. each, bread for supper 2 oz., with 2 oz. milk at each meal. Alcoholic stimulants as a rule are prohibited, though light claret was permitted by Tufnell. The writer has found that the greatest practical difficulty in carrying out this method of treatment is the use of the bedpan, especially as the amount of food ingested tends to constipation, in order to avoid which laxatives or mild salines should be frequently administered, or enemata may be skilfully employed, otherwise the pressure exercised in the expulsion of small masses of firm scybala will vitiate the entire treatment. After a period of 6 or 8 weeks the dietary should be gradually improved, and in cases of aortic regurgitation or where tertiary syphilitic manifestations have reduced the patient to a state of debility a less sparing dietary must be substituted from the start. The best nursing skill will be necessary in all cases, and a large bed with a firm hair mattress should be selected, so that the patient may be occasionally gently moved from one side of it to the other to minimise the danger of bedsores and discomfort.

An essential in the modern method of carrying out this plan of treatment consists in the administration of full doses of Iodides throughout the period of rest. No real scientific explanation of the action of iodides in aneurism is yet forthcoming, but there is not the shadow of a doubt that they are always highly beneficial. The Iodide of Sodium or Potassium (the former is preferable) should be given in doses of at least 20-30 grs. thrice daily after food. The drug almost invariably relieves the wearying nocturnal pains even of eroding aneurismal tumours, and it is believed to improve the tone of the cardiac muscle without increasing the pulse-rate or raising the general blood-pressure, whilst at the same time there are good reasons for believing that the deposition of firm fibrinous deposit is facilitated. Considering the large proportion of cases in which tertiary syphilis plays such a prominent part, one explanation of its beneficial action may be guessed at, since we know that it causes the absorption of the low-celled formations causing thickening and partial occlusion of the small arteries which are a factor in the general peripheral resistance; it is, however, difficult to conceive that its administration leads to thickening of the walls of the sac, as Drummond and others believe.

As already stated the Gelatin injections may be used as an adjuvant to Tufnell's treatment, and in suitable cases Macewen's method may also have a trial when the physician thinks it advisable to summon the aid of the skilled surgeon to supplement the medical treatment. In many cases anodynes or hypnotics must be administered to induce sleep, even when pain is entirely relieved by iodides, since in many patients extreme restlessness often is created by the enforced horizontal posture. All unnecessary coughing, which is often a distressing symptom, must be met by Morphia, and not by drenching the patient with expectorant agents. Cyanosis and urgent dyspnoea, when not relievable by Amyl, may be met by venesection; tracheotomy is generally useless. The dangers arising from a too prolonged course of the above starvation and rest cure must not be lost sight of; these were brought home to the writer many years ago in making a post-mortem on a subject in whom the treatment had been successfully carried out to the extent of complete solidification and absolute occlusion of a sacculated aneurism of the arch of the aorta. The debility following the treatment in the apparently otherwise healthy patient ended in the establishment of tuberculosis, which caused death within 6 months of the cure of the aneurism.

In cases where Tufnell's or Bellingham's dietary is obviously insufficient to support life without an intolerable degree of discomfort being induced the physician will do well to try a less sparing regimen which can be increased or diminished according to the requirements of the case. Sometimes a patient who rebels during the first week may be gradually brought into line by commencing anew with rest in bed and ordinary diet, which is gradually reduced to the minimum upon which his health and comfort can be maintained. It is in such cases that Gelatin and the following agent should have a fair trial.

Chloride of Calcium has been strongly advocated by Wright, with the view of causing coagulation of the blood in the sac, and the writer had once under his care the case of a large abdominal aneurism, in which Sir Almroth had commenced this treatment in the patient. After some few months of rest and the further use of the lime salt he passed from observation with the aneurism apparently completely obliterated.

Abrams of California claims to have discovered a "specific" for aortic aneurisms. This consists in forcibly percussing the seventh cervical spine by means of a special apparatus, or in the absence of such appliance by a pleximeter of wood or ivory, the strokes being continued for 15 minutes daily. The rationale of this treatment lies in the theory that "the subsidiary centre of the vaso-constrictor nerves of the aorta is in the spinal cord in proximity to the spinous process of the seventh cervical vertebra, and by stimulation of the centre by percussion the aorta is made to contract." He states that a cure follows in a few weeks, and he reports three such.

No mention need be made of Lecithin, Nuclein, Strontium, and the Iodide substitutes—Iodipin, Iodival, Iodol, &c.—which have from time to time been advocated as specifics, though the newer iodine compounds may be substituted for the older salts when these latter cannot be tolerated, which is not often.

ANGEIOLEUCITIS—see Lymphangitis.

ANGEIOMATA—see Nævus.

ANGINA, LUDWIG'S—see under Pharyngitis.

ANGINA PECTORIS.

The treatment during an acute paroxysm must be prompt and decisive to be of use, and as the sudden nature of the attack and its often brief duration prevents the services of the physician being obtained in time, the patient must be instructed how to act as soon as he feels the spasm and pain approaching.

Nitrite of Amyl is the only drug to be relied upon once the paroxysm has occurred. The glass capsules enveloped in cotton wool surrounded by a covering of silk, and each containing say 5 mins., afford the most convenient form for the administration of the remedy, and should be always carried by the patient in a pocket easily reached in emergencies. By pinching the fragile capsule firmly between the thumb and index-finger it is readily broken and the highly volatile contents can be inhaled through the nose. If inhalation through the open mouth be attempted the effect is not so rapid as the indrawn air does not become so highly saturated with the vapour of the drug as when a prolonged sniff is taken. As a rule some relief is marked in a few seconds, even in those cases where the arterial tension is not apparently high. In severe and prolonged attacks a second or third capsule may be used, and the effect may be intensified or prolonged by a full dose of alcohol, which acts also as a powerful vaso-dilator, and at the same time stimulates the over-burdened and weakened left ventricle.

In first attacks amyl not being at hand the prompt administration of a small hypodermic dose of Morphia combined with Atropine is the next best remedy, or Chloroform inhalation for a brief period may be tried, alcohol having been given preferably immediately before. A $\frac{1}{2}$ -oz. dose of Spirit of Nitrous Ether in hot water has a powerful and prompt vaso-dilating effect. In those constantly recurring attacks where the patient has warning that the seizure is about to take place Trinitrin in tablet form is better than amyl. One B.P. tablet should be broken up in the mouth and swallowed as soon as the premonitory symptoms are experienced, and by this procedure the threatening attack may often be completely prevented. Mannitol and Tetranitrate of Erythrol, though powerful and prolonged in their action, are too slow in the presence of an impending seizure

to be relied upon. Though the effect of a vaso-dilator like trinitrin is so striking and powerful the physician need have little or no fear of any toxic or injurious results, experience having proven contrary to what might reasonably be expected that no harm follows very large and frequently repeated doses, and he need never hesitate to push the drug in the face of high tension and cardiac pain. The writer believes that probably beyond the intense headache produced by it, the daily quantity ingested might reach as many as fifty or more B.P. tablets in the day without harm, though such amounts are never required. When this fact is grasped by the physician, repeated doses may be fearlessly administered so as to entirely prevent the seizures.

During the attack all constriction should be removed from the neck and chest; it is a mistake to insist that the patient should assume the horizontal posture, he must be advised to keep his body at rest, but he may safely be permitted to remain in the position which he feels most comfortable. If the attack has come on after a very heavy meal, and especially when ineffectual attempts at vomiting are present, the fauces may be tickled or an emetic of Zinc Sulphate should be given, but apomorphine had better be avoided. After a severe seizure has entirely passed away the patient should be compelled to rest in bed for 1 or 2 days, in order to enable the cardiac muscle to regain its normal tonicity.

In attacks of *pseudo angina* Amyl has often little or no action, but in first seizures the diagnosis not being established it should always be employed; its failure, too, is a valuable diagnostic point. A full dose of an active carminative, as 5j Tincture of Ginger with the same amount of Sal Volatile diluted, or 5 mins. Oil of Peppermint should be given. Where acute gastric distress is present, a promptly acting emetic is beneficial, and the same treatment is indicated in *Tobacco angina*. Often a large sinapism applied over the heart and pit of the stomach affords speedy relief.

During the intervals between the attacks of true angina pectoris there is great scope for the practical physician's skill in the management of the case. The patient's dietary, habits, temperament, and environment must be carefully investigated.

All excessive brain work must be abandoned, and violent muscular exertion of every kind interdicted. The pressure of life must be reduced to the lowest practicable minimum, as in arterio-sclerosis. Stock exchange speculations, literary and professional ambitions, business undertakings involving mental worry and prolonged anxiety or strain, must go by the board, and if life is to be prolonged, the arena of politics and controversy must be deserted, and every source of emotional excitement avoided. This should not mean the condemnation of the patient to an existence of listless inanity and slothfulness: new channels of tranquil usefulness should be opened up and interests awakened

in which the current of a well-regulated life may continue to flow as far as possible in placid domestic enjoyment and healthful, altruistic activity when his means permit of such partial retirement from the active battle of life. Regulation will probably be requisite of the hours of rest and exertion, which latter may be freely extended to liberal walking exercises on the level.

The dietetic problem is sometimes a serious one; in many cases it is made a serious one by the inexperience of the physician. When the exciting cause of the attack can be traced to errors in eating improper or in assimilating unobjectionable food, prompt steps must be taken to place the dietary upon a correct basis or to aid the weakened digestion by medicinal agents.

In many cases there may be nothing wrong with the food or the digestive power of the patient, the fault being one of over-eating sometimes even to the extent of gluttony. In such cases all that it is necessary to do is to reduce the total quantity of the food consumed to rational requirements without necessarily making radical changes otherwise in the diet. The physician should be guided at least to some extent by the patient's own experience of what articles of food agree best with him instead of writing out for him an extensive cut-and-dried menu which he must adhere to sometimes to his detriment, though few things please patients better at first than these elaborate instructions too often founded unconsciously upon the physician's own predilections. There are however some rules dictated by common sense which the physician must lay down in every case. Perhaps the most important of these is to insist upon extreme regularity in the hours of eating, next is to arrange that the amount of food ingested should be as evenly spread over the day as possible. For this purpose three meals, with intervals of about 5 hours between each, is a good rule to follow. The practice of a late heavy dinner after a long fast is especially to be avoided, as is also the habit of distending the stomach with large draughts of fluid at meal-times, and slow eating with thorough mastication should be practised.

As a rule farinaceous or carbohydrate food should be permitted only in small amounts, as these tend to the production of flatulent distension of the stomach and bowels, which is unquestionably an exciting cause of the seizures—a factor only second in importance to severe muscular exertion and emotional excitement. Animal food in such moderate quantities as will meet with the requirements of normal nutrition should form the staple basis of the dietary, and it will be advisable that the greater proportion or the whole of this should consist of light soups, white fish and poultry.

Green vegetables and digestible fresh ripe fruits should have a prominent place in the dietary, especially as constipation must be carefully guarded against, the passage of difficult motions containing dry scybala being especially liable to induce dis-

turbances in the general blood-pressure. Tea as an article of diet need not always be entirely prohibited, but it must be sparingly indulged in; the infusion should be weak and freshly prepared. Cocoa is however preferable. China leaf, prepared as Russian Tea, may be safely allowed between luncheon and dinner. Butter and fats are only to be permitted in small amount; pastry, baked meats, stews, and re-cooked dishes must be strictly forbidden. Alcoholic liquors—beer and wines—are better to be avoided; when the special requirements of the case demand alcohol, a little good whiskey in a small quantity of effervescing water may be permitted at dinner.

It is advisable that the patient should rest after each meal for a short time before undertaking any mental or physical exercise. Tobacco should be given up entirely, but when such a rule seriously interferes with the comfort of a patient he may be permitted under protest to indulge in an occasional cigarette, or pipeful of mild tobacco, but cigar smoking must not be sanctioned.

As regards medicinal treatment between the attacks, when no indications exist for active drugging on account of some intercurrent affection, the best routine agent is undoubtedly Iodide of Sodium, the beneficial action of which has been already dwelt upon in the article on Aneurism. The drug should be administered in courses of at least a month's duration with a break of 8 days at the end of each before restarting, and such treatment may be safely continued for many months, especially in those cases associated with aortic regurgitation or signs of general arterio-sclerosis.

The iodide treatment may be advantageously combined with the use of vaso-dilators, and the following is a good formula :

R. *Sodii Iodidi* gr. lxxx.
 Spirit. Ammon. Aromat. ʒj.
 Liquor. Nitroglycerini min. xvj.
 Aquæ Chloroformi ad ʒviiij. *Misce.*

Capiat ʒss. ter in die post cibos ex aqua.

A half-dose of the above mixture taken at 3-hourly intervals will produce better results than a full dose every 6 hours.

Arsenic is of value in the type of case where there is evidence of a distinct neuralgic basis for the pain, and it may be safely combined with the other ingredients in the above mixture to the extent of 3 or 4 mins. Fowler's Solution in each dose, but it should not be given for as long periods as the iodides.

In the serious and not very rare class of case where the attacks are frequent, and especially where the patient is constantly conscious of some premonition of a seizure, the writer's plan of keeping the high tension in check by the administration of small

and oft repeated doses of Nitroglycerin is most beneficial. This may be carried out by dividing each B.P. tablet into 6 or 8 fragments, and carrying them in the vest pocket, one being slipped into the mouth every half-hour, so that the full daily dose be so divided as to produce no symptoms of flushing of the face, throbbing of the vessels, or headache. By this method of using the drug attacks may often be entirely prevented for long periods, especially if a larger dose be given at bed hour, with a full dose of alcohol after lying down for the night. Tetranitrate of Erythrol and Sodium Nitrite may be employed in a similar manner.

Cardiac Tonics are often indicated, as symptoms of failing compensation may be present, and Digitalis should be avoided owing to its constricting action on the small vessels, which raises the general pressure. It is a mistake to count upon the combination of a vaso-dilator with the digitalis as sufficient to counteract the peripheral resistance, since the action of the former is rapid and comparatively evanescent, whilst the digitalis is slow and continuous in its effect. Strophanthus is therefore preferable as a routine in such cases, and it may be combined with Strychnine and Trinitrin, as in the following :

R. *Tinct. Strophanthi* ʒiss.
 Tinct. Nucis Vom. ʒij.
 Liquor. Trinitrini min. xvj.
 Aquæ Camphoræ ad ʒviiij. *Misce.*

Fiat mistura. Cpt. ʒss. quater in die ex paululo aquæ.

During the day the above dose would fall due about every 4 hours, and when the patient is confined to the house it is a good rule to encourage him to pour out his dose into the medicine measure and take the half of it every 2 hours, by which plan a more continuous action of the vaso-dilator is procured and headache is avoided. Theobromine or its salts are of value even when there is no diminution in the amount of urine passed. Mercury in the form of Blue Pill or short courses of not longer than a week of a daily $\frac{1}{2}$ -gr. dose of Calomel are decidedly beneficial.

Dyspeptic troubles, especially those associated with flatus and acidity, are to be met by carminatives and alkalies, and constipation by laxatives or mild salines.

Sanatogen as an adjuvant to the diet may be advantageously employed where Phosphorus is indicated, as in many cases arising from prolonged brain exhaustion.

High-frequency currents have been employed with advantage when arterio-sclerosis has been a prominent feature, but their use should be left in the hands of the electric specialist. Sometimes the application of the continuous current from 15 or more Leclanche cells with the negative pole on the nucha and

the positive placed over the lower part of the sternum may be tried with benefit. Recently *Arc Light Baths* have been highly spoken of. These should be employed till dermatitis is set up with the view of lessening the peripheral resistance through the permanent hyperæmia of the skin.

ANKYLOSTOMIASIS—see *Anchylostomiasis*.

ANOREXIA NERVOSA.

The treatment of this neurosis of the stomach must be directed upon the lines suitable for the management of the general neurotic condition—hysteria and neurasthenia—of which the complete loss of appetite is but a local symptom. Little benefit is to be expected from the administration of gastric tonics, but as a routine the treatment may commence with a vegetable bitter (not strychnine or nux vomica), combined with Dilute HCl and Glycerin of Pepsin. Where the affection has already caused emaciation to any great extent, rigid isolation in a well officered nursing-home and Weir-Mitchell treatment may be urgently demanded. In the early stages the passage of the soft rubber tube and slight irrigation of the stomach, followed by the introduction of a liquid meal, has a powerful moral effect, which compels some patients to swallow food through the dread of the repetition of the operation of forced feeding. This plan may be combined with the administration of nutrient enemata.

ANOSMIA.

Where polypi, or chronic inflammatory thickening of the mucous membrane of the middle turbinated bone, exists, the removal of either of these impediments may effect a speedy cure of the lost sensation of smell; and Lennox Brown has seen the condition disappear after the removal of an elongated uvula. In organic brain lesions, such as syphilitic gummata within the cranium, the sensation of smell may sometimes be found to return after the administration of large doses of Iodides given continuously for long periods.

Anosmia, occurring in hysterical patients, may yield suddenly to the local application of the induced current as in functional aphonia.

The greater number of instances of the affection met by the physician will be found to follow influenza. The great majority of these will get well without treatment, but Strychnine affords a reliable means of hastening the natural cure, or effecting restoration of the lost sense when nature fails. The drug may be administered by the mouth in combination with small doses of Antipyrine, which seems to neutralise the influenzal toxins, but better results are obtainable by hypodermic dosage. The writer finds that a hypodermic tablet of strychnine ($\frac{1}{35}$ gr.) placed beneath the tip of the tongue twice a day meets all requirements.

ANTHRAX—see Malignant Pustule.

ANURIA—see Suppression of Urine.

ANUS, Abscess of.

This must be distinguished from the deeper collection of pus which forms in the loose fatty and areolar tissue occupying the ischio-rectal space, and which is distinguished by the name of ischio-rectal abscess. In anal abscess the site of the suppuration is one of the cutaneous creases, or folds, close to the anal margin and originating in an inflamed sebaceous gland. Incision under cocaine followed by Boric Acid fomentations or antiseptic poultices is all that is necessary along with a few days absolute rest. For the treatment of acute ischio-rectal abscess a free and deep crucial incision should be made under general or local anæsthesia, and the sooner this is done the better in order to avoid the abscess bursting into the rectum and the permanent establishment of a fistula. The contents of such abscesses are always most fetid, owing to the presence of the colon bacillus. In some an injury or an actual perforation of the bowel by fish-bones or small foreign bodies has originated the infection, hence the necessity of a deep and free incision through which the finger should be inserted to aid the removal of sloughs or shreds of gangrenous tissue, after which the cavity should be packed with iodoform gauze frequently renewed, in order to insure healing from the bottom. Where a fistulous opening is found to exist between the bowel and the abscess sac, the external sphincter must be divided at the same time.

Chronic ischio-rectal abscess as a rule is of tubercular origin, and in addition to the free incision curetting of the sac will be necessary, after which the treatment described under Abscess is to be carried out, injections of Bismuth Jelly being repeatedly used to facilitate the closing of the fistulous tracts which are so liable to remain.

ANUS, Fissure of.

When the crack, ulcer, or fissure is deep and of long standing, the surgeon, under local anæsthesia, should proceed at once, after the bowels have been cleared out, to make an incision across its entire length and deep enough to divide about one-third of the fibres of the external sphincter. The small sentinel pile, which is nearly always present at its distal end, should be removed at the same time. Ball finds that removal of the latter alone is sufficient to induce healing in the ulcer. Some surgeons treat the affection by forcible dilatation of the sphincter under Chloroform. Touching of the ulcer with the thermo- or galvano-cautery is often quite sufficient to effect rapid healing, and Donner finds that a few insertions of one electrode within the sphincter and

the other placed over the fissure while a mild continuous current is turned on act equally satisfactorily. In more recent cases the application of a mild caustic like strong Carbolic Acid suffices and causes little pain if cocaine be previously used. If by any means the reflex spasm of the sphincter can be controlled, the fissure heals spontaneously, and by regulating the bowels this may be sometimes easily accomplished. Purgatives are injurious and their action usually causes as much pain in defecation as if constipation were present; the physician should administer a laxative like Olive Oil, Sulphur, or Tamar Indien, which will produce a copious *softened* motion, often voided without pain. The distress and pruritus accompanying the affection cannot satisfactorily be relieved with cocaine or morphia, and the writer finds nothing so successful as the B.P. Ungt. Conii combined with Ichthyol. This must be inserted well within the sphincter. He believes that the conium paralyses the ends of the motor nerves distributed to the fine muscular layer under the surface of the mucous membrane, and prevents the reflex twitching which keeps up the incessant pain and uneasiness after the patient retires to rest, and after the act of defecation. The conium ointment alone, or with ichthyol, can be made into a suppository and used with advantage. If eczema is also present, Tar can be added to the ointment, and where an astringent is required to arrest bleeding, Cripps adds 10 grs. Persulphate of Iron to each ounce. The B.P. ointment can be ordered of double strength, and with patience and care as regards the condition of the bowel most cases of anal fissure can be made to heal under its use.

ANUS, Fistula of.

In *blind external* fistula, there being no communication between the fistulous tract and the interior of the bowel, an attempt may be made to induce healing before resorting to incision by applying a strong solution of Zinc Chloride on a probe coated with a thin layer of wool, or strong Carbolic Acid may be used in the same manner. Beck's warm Bismuth Jelly may be injected. The writer has seen healing occur after repeated injections of undiluted Tinct. Benzoin. Co. When these fail, as they usually do, a free T-shaped incision may be made, and sometimes this is all that is necessary, though usually the sphincter will require division at the same time, and the thorough scraping of the tract, which must be exposed and dissected bit by bit in search of a hidden internal opening.

In cases of *complete* fistula a probe-pointed director is inserted into the skin orifice, and gently made to enter the bowel through its internal opening. The point is then hooked down by the finger in the rectum, and brought through the anus. The next step is to pass a curved bistoury along the groove, and divide at one stroke the intervening tissue—mucous membrane, sphincter

and skin. The *cul-de-sac* above its internal opening is next divided from the internal surface, after which the entire fistulous tract should be dissected out; and where this is not possible it must be thoroughly scraped, so as to completely destroy its internal lining. The incised surfaces should be minutely examined for evidences of secondary tracts or tunnels, and these must be excised or scraped, but the sphincter is only to be divided by the one clean incision across the direction of its fibres. The wound is finally packed firmly with Iodoform or Sublimate gauze, over which a pad of absorbent tissue is bound by means of a T bandage. At each daily dressing the fresh gauze should be inserted to the very bottom of the wound, so as to encourage granulation from below, and prevent union of the lips of the wound near the surface. It will be evident that upon this careful after-treatment, which often falls to the patient's ordinary medical attendant, depends the prevention of relapses or return of the fistula. The bowel should be empty at the time of operation, and a motion by the use of Castor Oil or enemata should be effected upon the second day, and all through the rest in bed, in order to avoid hard scybala.

The treatment of *blind internal* fistula is practically the same as that for complete fistula. The inner opening being detected by the finger just inside the sphincter, a probe-pointed director is passed into it, and the point made to bulge or project through the attenuated cutaneous roof of the tunnel, after which all the tissues between the skin and the director are to be divided by a curved bistoury as just described, and the fistulous tract excised or scraped before the wound is packed with Iodoform gauze.

Where any of the varieties of fistula are found in patients far advanced in debility by phthisis, diabetes, or hepatic cirrhosis, the use of the knife must be avoided, save to incise the baggy skin over the roof of a blind internal fistula; the best method of treatment will then lie in injecting Beck's Bismuth Jelly (liquefied by heat) through a fine nozzled syringe daily into the fistulous tract.

ANUS, Imperforate.

Where only a thin membrane bulging forwards shows that there is no deficiency or arrest of development in the rectum, a free crucial incision is sufficient to relieve the condition. In the absence of any sign of an anus a free deep incision should be made in the middle line, and the tissues dissected up for an inch or more in the direction of the sacrum, till the distended bowel is reached, when this may be opened freely, and dilated daily by the passage of the finger or a large bougie. It is usually unnecessary to attempt to pull down the bowel and suture it to the margins of the skin wound as was formerly done.

Where the dissection fails to reach the lower end of the rectum,

Mayo Robson advises opening the peritoneum from below in order to find the lower end of the bowel, which is then seized, brought down and fastened to the margins of the skin wound. Failing this the only alternative is to open the colon by Littre's method in the left groin, and this is the only method of procedure when the bowel opens into the bladder. Where the bowel communicates with the urethra or vagina, a careful dissection from the perineum may remedy the condition, and after a time the vaginal opening may require suturing.

ANUS, Prolapse of.

The prolapsed anus or lower part of the rectum is usually easily reduced when the protrusion is of recent origin by smearing the mass with vaseline and making firm pressure by the fingers so as to gently push it back within the grasp of the internal sphincter. If reduction does not speedily follow, owing to the struggling of the patient (who is generally a child), he may be placed in the lap of a nurse, with his head depressed as thoroughly as possible, when the greased right forefinger is inserted into the lumen of the bowel as if making a high rectal examination, when the prolapse will usually be easily reduced. Cripps after oiling the finger wraps a layer or two of dry lint round it before inserting it into the bowel. After reduction the finger is slipped through the lint, which is left behind as a support to the relaxed walls.

A conical piece of Ice enveloped by Iodoform Gauze is employed by Hajech, who introduces it instead of the forefinger into the opening, when gentle pressure causes the protruded mass to pass above the internal sphincter carrying the gauze and ice along with it, where they are then left *in situ*, the operation being repeated after each evacuation of the bowel contents.

In prolapses of longer standing the blood must be gently and patiently expelled by the pressure of the fingers, after which the forefinger inserted into the opening and pressure applied by the adjoining portion of the metacarpal prominence will effect reduction after some minutes. A firm pad of dry lint kept in its place over the anus by broad strips of adhesive plaster, securing the nates firmly together, or a T bandage, should then be applied till next defecation.

Brodie's plan was to move the bowel by the injection of 8 oz. warm water whilst the patient was lying upon his side, after which a small enema of cold water was left in the rectum. This treatment is better suited to adults than children.

After reduction the cause of the prolapse should be sought for: threadworms, polypi, a long or adherent prepuce, hæmorrhoids, urethral stricture, vesical calculus and prostatic troubles will demand relief. Emaciation is a common cause, and as insisted upon by Cripps permanent cure may be expected when the absorbed fatty tissue is replaced in the pads in the ischio-

rectal fossæ. Constipation must be remedied by laxatives, purgatives often aggravating the condition. Irreducible prolapses, when small in extent, may be treated like a ring of hæmorrhoidal growths by removal, but in larger masses excision must be very carefully performed in order to avoid injury to the peritoneum, and sometimes it may be necessary to allow the irreducible mass to slough.

Astringent drugs may be applied locally to the relaxed mucous membrane with the view of permanently increasing its tone and preventing future prolapses. Tannin, solutions of Alum, Nitrate of Silver, Perchloride of Iron, and astringent decoctions such as those of *Krameria*, Logwood, Oak Bark, &c., may be used, or these drugs may be administered in suppository or ointment form. Occasionally the Continuous Current has produced good effects, and Ice is often useful.

The best local agent is Ergotin, and Vidal has reported successes by injecting 1-3 grs. in solution into the prolapsed mass, even when the rectum is involved in the prolapse.

When the above measures fail to prevent recurrences, the prolapsed surface may be painted over with strong solution of Nitrate of Silver, or, if small in extent, Nitric Acid may be brushed on it at several spots. Passing lightly the actual or thermo-cautery over the surface of small anal prolapses and at the same time causing it to destroy completely any pendulous folds of skin existing about the anus often effects a complete cure.

In chronic intractable cases Cripps puts the patient into the lithotomy position, and with the actual cautery sears the mucous membrane by drawing it in the direction of the axis of the gut, forming four lines, each $\frac{1}{4}$ inch in breadth, commencing at the highest portion of the prolapse and running down to the anal margin, one line being on the anterior surface, one behind and one on each side.

The prolapsed mass is then reduced and the rectum packed with iodoform gauze, leaving a tube of rubber in the centre of the packing in order to relieve flatus. The rationale of the treatment is the production of such a degree of inflammation as will fuse together the mucous and muscular coats of the rectum so as to prevent slipping or invagination.

Where a considerable amount of rectum is included in the prolapse, it will be necessary to remove one or more flaps of mucous membrane and bring the edges of the gaps together in order to diminish the calibre of the bowel. This operation is sometimes attended by alarming hæmorrhage, and some surgeons prefer to make a complete circular resection of the prolapsed portion of the rectum.

Curling's plan of narrowing the anal aperture by powerful caustics is less satisfactory than Kelsey's ingenious method of carrying a curved threaded needle round the lower end of the

bowel, through the submucous tissue, and tying the ligature over the finger-tip inserted in the anus; as the latter is withdrawn a submucous support to the sphincter is thus produced which is left *in situ* for 3 weeks.

McLeod's method of performing *recto-* or *procto-pexy* through an abdominal incision to permit the rectum being drawn up and fastened permanently to the inner aspect of the abdominal wall has given good results, and Peters advises that the sutures should be so inserted as to cause narrowing of the lumen of the gut in order to prevent the colon descending into the rectum.

In complete rectal prolapse the aim of surgical treatment should be to obliterate Douglas's pouch, and Lilla recommends that the operation of colopexy should be combined with it, and that a subsequent perineorrhaphy should be performed if permanent cure is to be effected.

ANUS, Pruritus of.

When this troublesome affection arises from the irritation of anal fissure, fistula, piles, polypi, condylomata or threadworms the removal of the cause usually effects a speedy cure. When much eczema is present, the treatment of this disease should be closely attended to, and Tarry compounds are indicated in combination with remedies used to allay the incessant itching.

In many cases there may be no rectal cause discoverable even after a full exploration following dilatation of the sphincter, the condition being the local manifestation of a general neurosis. Such patients often suffer from insomnia, and the slightest scratching of the skin about the anus is sufficient to bring on a severe nocturnal attack of pruritus. The general neurotic condition, often the result of prolonged mental strain, anxiety, or grief, demands constitutional treatment, as change of scene, brain rest, tonics—like sea-bathing—Phosphorus, Zinc, Arsenic, Quinine and Iron. Valerianates and Antipyrine in small doses, by lessening the irritability of the peripheral sensory nerves, are of great value.

The best of all local remedies is the Ungt. Conii, which may be made of double the B.P. strength. It should be inserted with the finger after defecation and upon retiring to rest. The proprietary ointment known as Resinol is also valuable, and it may be used mixed with an equal weight of the hemlock compound, or the latter may be made into a suppository alone or with Ichthyol. Cocaine, Morphia, Belladonna and Menthol relieve the itching for a time, but often cause in the long-run aggravation of the symptoms by inducing a hypersensitive condition of the sensory terminals.

An ointment containing 30 mins. Creosote or Carbolic Acid and 30 grs. Camphor in 1 oz. Lard is often useful, but Ungt. Conii will make a better basis than the lard. Where greasy compounds fail, the part, after a small cold-water enema and

free ablution with cold or tepid water, may be freely dusted over with Bismuth Carbonate, Fuller's Earth, Zinc Oxide, or Calamina, and this form of treatment is valuable in women, where the anal pruritus is sometimes caused by a small quantity of vaginal discharge trickling over the anal region, even when there may be no prominent vulvar irritation complained of. Lotions are seldom efficacious; the parts may, however, be advantageously sponged over with Borax or Boric Acid solution, which effectually removes the remnants of the greasy applications before renewing them again. Solution of Chloral Hydrate, 1 dr. to 5 oz. water, may be tried. Sometimes the introduction of a pledget of lint soaked in Liq. Calc. Chlorinatæ within the anus affords relief till the patient falls asleep.

In severe or long-established cases no relief need be expected until the patient has been taught to avoid scratching the anal region, and it is a practical point of great value in the treatment to inform him that he may relieve the itching of the anus by *vigorously scratching the skin over the buttocks*, and this will not do any harm.

Banks's plan of searing the anal margin by the thermo-cautery often affords relief, but the writer has seen it produce afterwards an intolerable aggravation of the condition owing to the formation of scar tissue and thickening of the skin in the anal folds.

In intractable cases defying all local applications Ball's method of dissecting up a flap of skin on each side of the anus, after which all the underlying cutaneous nerves are to be severed, should be resorted to.

APHASIA.

The condition is usually associated with hemiplegia of the right side of the body, and the speech difficulty need receive no attention till the treatment of the cerebral lesion, by absolute rest of body and mind, has demonstrated that the hæmorrhage, embolism, or thrombosis is no longer active or has ceased to extend. In functional cases, as in hysteria and post-epileptic aphasia, treatment is seldom necessary, the speech centres soon regaining their power spontaneously. It is different where permanent damage has occurred, and the hope of articulation being restored must lie in efforts being made to call into action the dormant speech centres in the sound cerebral hemisphere (usually the right one); but if the commissural fibres are destroyed there is little or no result to be expected.

In ordinary *motor* aphasia, where the patient remains perfectly conscious of all that is said to him, but is only able to reply in meaningless, short ejaculations, he should be educated to write with his left hand by copying printed or written sentences when the power of writing remains with him. The simplest speech movements are to be taught patiently several times a day, beginning, as in the case of a child, with the spelling and articulation

of letters and short monosyllables, his oral education being supplemented by exercises in writing and reading short sentences. (In left-handed patients the right speech centres are in daily operation, and these, of course, escape when the damage is confined to the left side of the brain.) In young subjects by persistent education of the right speech centres articulation may be entirely restored, and even in older patients the same result is sometimes witnessed when the callosal fibres have completely escaped in the primary lesion, and industrious perseverance in copying and speech exercises has been conscientiously carried out and the use of his left hand encouraged in every way possible.

In *sensory* aphasia from cortical lesions the difficulty of treatment is greater. If this be of the *auditory* type the patient is word-deaf and unable to write from dictation; though he hears the sounds of the words spoken to him they appear as in a foreign tongue, and as his power of articulation may be good he uses the wrong words, unconscious of his mistakes. The only method of treatment in this condition consists in repeated exercises of pronouncing words which are written or printed when the eye of the patient is kept fastened upon the word; afterwards the object represented by the word may be shown to him, as a cat, dog, pin, &c., and he should be encouraged to repeat its name frequently.

In subcortical or pure word-deafness the auditory speech centre remains intact, internal speech is unimpaired, and the patient can express himself perfectly in writing or vocally, and though he is unable to understand or repeat spoken language he can read aloud perfectly.

When sensory aphasia is of the *visual* type (alexia), the patient is capable of spontaneous speech, and comprehends spoken words, but he fails to understand written and printed language, and he cannot write or copy intelligently, though his central vision is perfect, and he cannot read aloud. In this condition the only treatment is such as is employed in education of the blind, supplemented by training the patient to write with his eyes closed, or to write in the air with his index-finger, and to trace over each letter with a pencil or by means of his finger, by which latter method he is only able to understand or read his own writing.

APHONIA.

Complete aphonia comes under the eye of the physician commonly as a manifestation of hysteria, and its cure is rapid and satisfactory. A *strong induced* current is the remedy for this affection. One wire of the battery is attached to a flat electrode, which is made to rest upon the outer surface of the larynx, whilst the other wire is attached to a laryngeal electrode mounted on a handle, containing a small contact-breaker. This electrode is inserted into the space between the cords, and the

current turned on by pressing the button in the handle so as to produce a painful and a severe shock. At the same moment the patient should be commanded to pronounce some word, which she frequently accomplishes in a loud cry. Occasionally the application of the shock must be repeated. The continuous current is useless, and so also is a *weak* induced current. Sometimes the passing of a smart induced or interrupted current across the larynx, by applying a pole to each side of the external surface of the larynx, is enough to restore voice. Often all that is necessary is to introduce a laryngeal mirror into the pharynx, and firmly command the patient to utter a particular word, the "suggestion" being sufficient to arouse the dormant will-power, but relapses are more likely to follow this plan of treatment.

The writer has witnessed the successful treatment of hysterical aphonia by intoxicating doses of Alcohol—a most objectionable and unjustifiable proceeding. Atropine and Belladonna, pushed to the extent of producing their physiological actions, have been employed, but Electricity fulfils every indication. Strong solution of Nitrate of Silver, 1 dr. to 1 oz., has been applied with a brush to the larynx with rapid improvement. Hunt recommends the training and systematic exercise of the vocal cords by singing the vowels and numerals. Crouch states that in relapsing and very chronic cases of aphonia, isolation of the patient should be insisted upon, after which exercises in singing the musical scale should be practised commencing with some high note, which may be elicited by making her attempt to phonate. Afterwards the intonation of words and of poetry, and finally the reading aloud of prose, and frequent use of the voice in singing are to be daily practised. When the aphonia is the result of organic lesions in the larynx or thorax, the treatment of the laryngeal ulceration, ankylosis of cartilages, pressure paralysis of nerves, &c., obviously must be the treatment of the primary disease. For the treatment of Hoarseness, see Laryngitis.

APOPLEXY.

If we restrict the term to the more or less sudden loss of consciousness and motor power arising from a vascular lesion inside the cranium, the cause may for all practical purposes be considered as due either to the rupture of an artery in the cerebral tissue, with the extravasated blood ploughing up the brain substance, or to the lodgment of an embolus from the heart, or to thrombotic occlusion occurring in a diseased cerebral vessel. Though the treatment of these three conditions in theory is widely different, nevertheless, owing to the difficulty of diagnosis, which is in many instances insuperable, the physician will be wise in the absence of differentiating factors to regard all cases as due to cerebral hæmorrhage.

At the start it may be safely said that there are few conditions

in whose presence the physician feels so powerless, but there are also few in which so much harm can be done by active meddling and unwise attempts at heroic treatment. The first duty of the attendant is to insure absolute rest regardless of the wishes of the patient's friends who are often anxious to have him removed from the place in which the seizure has taken place. He should be placed upon his back on a sofa, or on a bed extemporised in the room in which he has fallen by laying a mattress upon the floor. His head and shoulders should be elevated slightly, all constrictions about the neck being removed. If there be any urgent necessity for the removal of his clothing this should be effected in the most gentle and cautious manner by cutting up the seams and removing the garments piecemeal, whilst a reliable assistant takes charge of the head to prevent its being shaken. The next step is to turn his face to one side in order to prevent the tongue falling directly backwards, and to permit of the saliva dribbling from the angle of the mouth.

No attempts should be made to arouse consciousness by shouting into the ear, shaking the body, or flapping with towels or other methods of stimulation, and certainly nothing should be administered by the mouth of the nature of food or stimulating drinks. Rubber bottles, filled partially with warm water, should be placed at his feet and along each side of the trunk. In their absence warm blankets may be used, but friction or massage of the cold limbs had better be avoided. Ice, when available, should be applied to the head, or an evaporating lotion to the forehead and temples. Counter-irritants, used with the view of determining a flow of blood to the surface of the body, are as a rule to be avoided. The best of these agents would be a sinapism applied to the nape of the neck, but, especially in heavy and muscular subjects, this can scarcely be carried out without shaking the cranium. The dangers of subsequent aspiration pneumonia should be minimised by maintaining an aseptic condition of the mouth, any dental plates being removed, and the tongue and lips smeared with Glycerin of Borax.

Beyond the above palliative measures nothing should be done to combat any symptoms of shock or collapse. To administer hypodermically or by rectum powerful cardiac stimulants will only cause the heart to beat more vigorously and pump more blood into the ruptured cerebral tissue; hence even the use of irritating smelling-salts may be injurious through their power of increasing the general blood-pressure.

The profound coma remaining, with a high tension pulse, vigorously acting heart and signs of asphyxia showing themselves, the question of blood-letting should be considered. Before this is finally settled, a brief trial may be made of compression of the carotid trunk in the neck with the view of arresting the circulation in the branches of the middle cerebral. If carefully and skilfully carried out this procedure can do no harm. Ligature

of the vessel has been recommended by Horsley and others. The antique practice of opening the temporal artery is now universally condemned, but unquestionably speedy and sometimes permanent benefit follows the opening of a vein in the arm when asphyxia is increasing and threatening life. Of late years a bolder surgical measure has been advocated, and found acceptance in some quarters. This consists in trephining a large opening in the skull and evacuating the area of hæmorrhage; but as pointed out by Russell and Sargeant this is only admissible when the case is going on from bad to worse, and when in the coma it can be confidently ascertained that the paralysis of motion is hemiplegic.

Before, however, considering such a serious step, the physician should resort to the use of other agents possessing the power of reducing the general blood-pressure after venesection has been tried. These are vaso-dilators and purgatives. Nitrite of Amyl is practically the only drug available of the former class, as it can be so readily administered by inhalation, and it is innocuous unless asphyxia be already urgently threatening life. It is therefore worth a trial when the pulse is bounding and the tension high. Owing to its evanescent action, the effects must be kept up for some time before its trial is abandoned. Owing to the slow action of purgatives in the apoplectic state, even of Croton Oil—the only available cathartic—this drug should be administered without delay. The writer does not share the view of Leonard Guthrie, who condemns the indiscriminate use of croton oil and calomel in all patients found to be unconscious and hemiplegic.

Whilst it is true that remedies which reduce the general blood-pressure are injurious in thrombotic cases, and should not be used when the clinical symptoms clearly indicate this condition, it is to be remembered that the diagnosis is often almost impossible, and of all the agents used to reduce blood-pressure purgation is the least objectionable or dangerous. Hence under the conditions now being considered, it may be used as a routine with comparative safety. No good usually can be expected by enemata, and much harm may be done by the necessary changes produced by the moving about and turning of the patient's body during their administration. An enema is, however, clearly indicated if the rectum is impacted with scybala, which prevent the action of croton oil. One or two drops of croton oil, with 5 grs. of calomel mixed with a little butter or a few grains of moistened sugar, should be placed far back upon the tongue, and often this dose will require repetition. The necessity of relieving the bladder should not be lost sight of.

Should the patient survive the comatose stage, the period of returning to consciousness demands close attention. This is often accompanied by febrile reaction, which necessitates the removal of all external aids to the keeping up of the body heat,

as it clearly also is indicative of the continuous use of the ice-cap and the enjoinder of absolute rest of both body and mind. Nothing is more reprehensible at this stage than the attempts to test the patient's consciousness by tempting him to recognise his friends and answer questions and otherwise rousing him. As soon as swallowing power has returned, a few teaspoonfuls of milk may be cautiously administered from time to time, and it is a wise precaution taught by the experience gained from surgical head injuries to withhold all animal foods, even in the form of soup, for a long period after convalescence. The rest during convalescence should be prolonged and thorough.

The after-treatment of cerebral hæmorrhage is identical in most cases with that of the hemiplegic condition usually remaining, and will be dealt with under its own heading. The primary condition causing the hæmorrhage, as Bright's Disease, arterio-sclerosis, &c., will of course require attention in all cases.

It only remains to mention the treatment of an apoplectic seizure, where the history or symptoms indicate thrombosis or embolism as the cause of the loss of consciousness.

In *thrombosis*, after the patient has been put to bed with his head and shoulders but slightly if at all raised and heat applied to his surface, the immediate indication is to check the coagulable power of the blood. Owing to the urgency of the symptoms drugs for this purpose are too slow in their action to be relied upon, though the writer once injected Ammonia into the carotid artery with the hypodermic needle, a procedure followed by most striking relief for a time to all the symptoms. In relapsing cases where time permits the blood may be decalcified by the administration of Citric Acid or its potash salt.

As the extension of the thrombotic change is favoured by everything that tends to render the circulation languid stimulants are indicated. The best of these is Ammonia, for as already mentioned it diminishes the coagulability of the blood, and at the same time quickens and strengthens the heart's contractions. 30 mins. of the diluted liquor may be mixed with 10 oz. normal saline and injected into a vein or hypodermically, and the strong liquor may be held near to the nostril. Guthrie emphasises the view of Mott that the deep coma in thrombosis is due to the pressure of venous congestion consequent upon arterial blockage; hence the necessity of relieving the asphyxia by moderate venesection, leeching, or dry-cupping, and purgation in the later stages, as in cases of cerebral hæmorrhage. In syphilitic cases where warnings of the threatening attacks are not rarely seen the proper treatment will consist of full doses of the Iodides, always combined with large doses of Ammonia, whilst Mercurial Inunctions should be commenced without delay. Sometimes in cases of cerebral hæmorrhage, especially where there are reasons for believing that small foci of softening have previously existed,

these warnings, if promptly met by absolute rest and remedies capable of reducing the blood-pressure, may save the patient from a severe and fatal apoplectic seizure.

Embolism causing apoplexy must originate in the detachment of a fibrinous mass from the endocardium, or pulmonary veins, or from a vessel between the heart and the cranium. The immediate effect is the shutting off of blood from an area in the brain, and the tendency of further coagulation of the blood around the fibrinous focus brings the treatment of the case practically into the same category as that of thrombosis, and Ammonia in normal saline solution, hypodermically or by the rectum, affords the best prospect of success, followed up by full doses of Citric Acid should the patient survive the initial shock and pressure symptoms.

In the embolism following ulcerative endocarditis the plug being of a septic nature thrombosis is certain to follow, and a fatal issue is always to be expected from subsequent cerebral suppuration. In the sinus thrombosis which is often secondary to disease of the middle ear or mastoid cells, and which sometimes demonstrates its presence by the gradual onset of apoplectic symptoms, the treatment should consist of the prompt removal of the original septic focus in the temporal bone by the active surgical measures detailed under Ear Disease. The intense headache following all the forms of cerebral apoplexy after consciousness has been restored is best relieved by large doses of Bromides combined with moderate amounts of Antipyrine, and some practitioners still believe that the absorption of the clot in the cerebral tissue may be hastened by the continuous administration of Iodides.

APPENDICITIS.

It may safely be said that the lessons derived from a study of the accumulated statistics of late years have removed the treatment of inflammation of the appendix from the domain of medical therapeutics to that of operative surgery. As the care and responsibility of the great majority of all cases at first fall into the hands of the physician a few remarks on the preliminary medical management of the affection may not, however, be out of place. With the advent of the first symptoms of pain, tenderness and rigidity in the right iliac fossa, accompanied by fever and vomiting, the patient should promptly be ordered to bed; he may have a plain tepid-water enema, and a poultice should be applied to the right side of his abdomen. Beyond the exhibition of these preliminary measures it is very doubtful if the physician should proceed. As the pain is often severe Morphia is obviously indicated, but the consensus of opinion is decidedly against its routine administration, and most surgeons are strong in their condemnation of the use of the drug in every case owing to its power of masking all the symptoms of the disease, and thus

misleading the judgment about the necessity of operative interference till too late, and the same remark applies, though with less force, to the administration of a strong purgative, which, however, has special dangers of its own, and should never be employed.

As soon as the diagnosis of appendicitis has been established the decision to operate without an hour's unnecessary delay should be promptly arrived at; during the interval necessary to make preparations or to secure the removal of the patient to a nursing-home or hospital a hypodermic injection of morphia need not be withheld when his sufferings are acute. Best results as a general rule follow operation undertaken during the first 24 hours, and it is no longer considered wise to wait for the advent of symptoms or signs of abscess formation.

A serious problem sometimes confronts the surgeon when first called in after the termination of this period, or in an ordinary "interval" case. The disease may have commenced with urgent and well-marked signs and symptoms which have passed off more rapidly than they appeared owing to the temporary relief afforded to the high tension in the appendix through a small perforation, a fact which may be only recognised by the change in the pulse or facial aspect of the patient. To delay under these circumstances will be but to permit the advent of a general septic peritonitis, which will jeopardise life, and possibly render operative interference unsuccessful. Gangrene of the appendix is a very treacherous form of the disease, and is especially liable to mislead.

Recently the writer has seen a surgeon operate on a case which was supposed to be quite resolved, the operation only being undertaken as a preventive of further attacks, when a large and totally unsuspected abscess ready to burst into the peritoneal cavity was discovered.

The best incision for all purposes is one of 3 or 4 inches in length, made at right angles to the line of which McBurney's point is the centre, the external oblique being divided in the direction of its fibres, and the fibres of the internal oblique and transversalis separated without cutting. Some surgeons prefer a short and straight incision, which splits the fibres of the rectus, or divides the right *linea semilunaris*; in any case there should be as little injury as possible to motor nerves and muscular fibres in order to prevent permanent weakening of the abdominal wall. The peritoneum being divided or torn open so as to admit the right forefinger which, on being passed into the opening in a downward direction over the iliac vessels, is then turned upwards till the mesentery of the ileum is reached which guides the operator to the appendix. This is hooked forwards by the finger or drawn outwards by forceps, when its mesenteric attachment is clamped, ligatured carefully and finally divided by the scissors. A circular incision having been made through its peritoneal cover-

ing the appendix is next clamped near to its base and ligatured with catgut in the groove made by the clamp, after which it is amputated by an incision carried through its mucous and muscular coats on the distal side of the ligature. The stump of the removed organ is carefully invaginated after being scraped or touched with an antiseptic, and the peritoneum over it closed by a double row of Lembert or bag sutures; it is then dropped back into the abdominal cavity, after which the different layers of the abdominal wall incisions are each to be separately and carefully sutured, after accurate adjustment of the lips of each has been accomplished.

The patient on being transferred to bed with a pillow placed under his knees should be compelled to rest for a period of not less than $2\frac{1}{2}$ or 3 weeks to secure thorough union of the edges of the wound in the different layers of the abdominal wall in order to prevent hernia.

Where suppuration has already occurred, the surgeon may endeavour to incise the abscess without opening the peritoneal cavity, though Murphy and others insist upon the danger of an undetected leakage being overlooked if the abscess contents be merely evacuated through the wound without opening the peritoneum and shutting up the cavity with gauze. When the abscess is circumscribed, its incision over the most prominent point, the evacuation of its contents and the mopping out of its walls with a mild antiseptic solution, efficient drainage being provided for, meet most requirements.

In suppurative cases there is still a division amongst surgeons regarding the treatment of the appendix itself, some operators contenting themselves with the evacuation of the abscess cavity with or without opening the peritoneum and leaving the organ behind. The opinion is steadily growing that the rule should never be deviated from of searching carefully for the appendix in every case and effecting its removal when this is at all possible. Hence the complete operation of opening the peritoneum with the view of getting a better opportunity of exploring thoroughly the abscess cavity is usually preferred. After the opening of the peritoneal cavity on the inner side of the abscess the latter is completely shut off by packing gauze around it; it is then incised or its walls torn through by the finger, all adhesions gently broken down, and when the pus has been evacuated and the cavity carefully wiped, the appendix being found it is ligatured and removed. The cavity of the abscess, after being gently washed out, is drained by the insertion of one or more tubes, or packed lightly with gauze.

When not only local suppuration has followed the inflammation originating in the appendix, but when there are already evidences that a *spreading or diffuse septic peritonitis* has set in, a more serious responsibility confronts the surgeon. There is, however, no alternative but to give the patient the advantages which

prompt operative interference alone affords. An incision being made as in ordinary appendicitis it is prolonged backwards towards the loin so as to permit of free exploration of the appendicular region and peritoneal cavity; the organ being sought for and found is removed. The less wiping of the peritoneal surface and removal of exuded lymph the better; this process removes the epithelial layer and so destroys the first line of defence against the septic organisms. A second important fact is being now widely appreciated. Formerly the peritoneal cavity was flushed out freely and persistently with saline or antiseptics; it is now known that this is a potent means of disseminating the invading microbes over the entire peritoneal surface, but especially towards the upper zone of the abdomen where absorption is most active, instead of keeping the septic process towards the pelvic region, where resistance to them is greatest. The wound is drained by a tube or gauze passed into the abscess cavity, and another inserted deeply into the pouch of Douglas. Sutures may be temporarily inserted to keep the drainage-tubes in position or the wound may be closed permanently except around the drains. Some surgeons prefer to drain the iliac fossa by a tube inserted through a counter-opening in the right flank at the ascending colon.

Upon recovery from the anæsthesia the patient is placed in the Fowler position (propped up in bed in the sitting posture), and with a suitable irrigation apparatus saline solution is made to trickle into the rectum not quicker than it can be absorbed. The quantity introduced in this manner skilfully carried out may amount to 20 pints in the 24 hours without the least distension of the rectum or colon. The abdominal and pelvic lymphatics being distended and flushed by this means the danger of septic absorption is reduced to a minimum, thirst disappears, the eliminatory organs are powerfully stimulated and the heart strengthened. Lavage may be resorted to when the vomiting is persistent, but if his condition does not permit of this the patient should be encouraged to wash out the organ by taking large draughts of tepid saline solution. A full dose of Calomel should be given 12 hours after the operation. Anticolon bacillus vaccine or serum has been used with marked benefit in some cases, and in others polyvalent antistreptococcic serum has proved valuable.

In *recurrent* appendicitis the mortality has been reduced to almost nil by undertaking the removal of the diseased appendix during a quiescent period, and where induration and tenderness or local pain remain after spontaneous recovery of an inflammatory attack the surgeon should warn the patient not to wait for the advent of a second seizure. The purely expectant treatment of these and all other forms of appendicitis, acute or chronic, should be abandoned, owing to the dangers of perforation, gangrene, suppuration, or spreading peritonitis, which may without

warning of any kind suddenly supervene during the progress of an apparently mild attack.

Much has been written of late years upon the *preventive* treatment of appendicitis as the disease undoubtedly is greatly on the increase when every allowance has been made for improvements in diagnosis. The cause of the increased incidence of the affection must be regarded as still a mystery, and in the present state of our knowledge all that can be said is that constipation is the chief condition to be guarded against. Thorough mastication of the food, which should be of the plainest and most wholesome type, taken slowly and at regular intervals, is essential, and the mouth should be kept in the healthiest possible condition by attention to the state of the teeth, and the removal of every septic focus. Tyson insists upon the importance of a return to the primitive or natural attitude during defecation.

ARTERIO-SCLEROSIS.

Accepting this term in the broad sense of a diffuse fibroid change beginning in the internal or middle coat of the small bloodvessels throughout the entire vascular system, and often ending in atheromatous changes in the aorta and large arteries, the first step in rational treatment must be the application of our knowledge of the causation of the affection. Unfortunately the pathology of arterio-sclerosis cannot be regarded as in a satisfactory condition chiefly because of the difficulty of deciding whether some of the gross lesions are the result of primary or secondary causes.

Of Allbutt's three types of the disease the *toxic* is regarded as the product of blood changes, probably acting through the increased viscosity of the circulating fluid, due to the influence of toxins manufactured mostly within the body, as in typhoid fever, diabetes, and syphilis, or poisons, like lead and alcohol, introduced from without. Huchard maintains that the first stage of arterio-sclerosis (presclerosis) is due to intoxication, the direct result of renal and hepatic insufficiency, and is curable by suitable milk and vegetable diet, which reduces arterial tension by producing more complete elimination of the toxic substances assisted by diuretics like Theobromine, and by regulation of the habits and daily exercises.

Allbutt's second type—the *hyperpietic*—characterised by persistently high blood-pressure, is caused by either increased viscosity or a narrowing of the small arteries, or a combination of both these causes. The common causation factor in these cases is over-eating, though the patient may be of spare habit, and it is usually aggravated by the too free indulgence in alcohol, tea, coffee, and tobacco. The clear indication for treatment is to reduce the volume of food and drink to the requirements of the body; highly nitrogenised diet, especially that containing purin bodies and meat extractives, should be cut down to the

lowest safe amount, as in the dietetic treatment of chronic gouty patients. The habits of the patient as regards regularity of meals, moderate and cautiously regulated muscular exercises and the curtailment of all intellectual and business pressure or worry are no less important elements in the treatment. The general management of patients suffering from this type of arterio-sclerosis has been already defined in the article under the heading of Angina Pectoris, and by following the general principles there laid down life may be often considerably prolonged, and sometimes its span may be lengthened into the senile period of existence.

Drugs which directly reduce arterial tension will always at some period be clearly indicated in each case. Of these as a rule only the most slowly and continuously acting are admissible, save in the presence of acute attacks, when Amyl may be called for. There is a consensus of opinion in favour of occasional short courses of mercurials, 3 grs. Blue Pill twice a week, or $\frac{1}{2}$ gr. Calomel daily for 5 or 7 days at considerable intervals. These drugs must, however, be given with great circumspection when there is much albumin in the urine, and their effects must be carefully scrutinised. Saline purgatives are also of great value. Iodides are undoubtedly of use; their beneficial action on the circulation has already been dwelt upon in the description of the treatment of angina pectoris and aneurism. The Iodide of Sodium may be given in prolonged courses of 5 grs. *ter die* alone or combined with a vaso-dilator like Trinitrin (see formula on p. 43).

Iodipin, Iodalbacid, Sajodin, and the newer iodine compounds are extolled, but there is no proof that they are more efficacious than the sodium salt, though undoubtedly they can in some cases be better tolerated, and Iothion may be administered by inunction, and is very valuable in syphilitic cases.

Vaso-dilators may be employed to ward off a threatening attack of cardiac distress or asphyxia, and the nitroglycerin tablets divided into fragments may be continuously administered for many hours as described under Angina. Urgent dyspnoea may herald a fatal attack of oedema of the lung, and the writer has been able to satisfy himself that he has saved life by promptly opening a vein in the arm.

Renon reports benefit from Fibrolysin injections, which sometimes reduce headache and diminish the blood-pressure. Cardiac tonics are only admissible when the heart muscle has already shown signs of failure, and even then their administration must be carried out with much circumspection. As a rule Digitalis should be avoided owing to its action on the peripheral vessels, and the practice of minimising this by combining Trinitrin or Nitrite of Sodium with it in a mixture is based upon ignorance of the pharmacology of these drugs, the nitrites expending themselves upon a vaso-dilating influence which passes

off rapidly, leaving the digitalis to produce a prolonged and continuous action upon the high pressure which may seriously embarrass the already over-burdened ventricle. If digitalis must be given, small and repeated doses of trinitrin should be administered every half-hour between the doses.

Diuretics are indicated when the urine is scanty and of high density, a condition usually met with when the arterial tension is not abnormally great; here, as in the stage of presclerosis, Theobromine (5 grs.) or Diuretin (10 grs.) may be safely administered for considerable periods.

Martinet's practice of decalcifying the blood by the administration of Lactate of Soda and Lactic Acid, with the view of preventing atheromatous deposits in the vascular walls is of doubtful utility, as is also the plan of prescribing Citrates or Lemon Juice.

Though Hydropathy and Baths of all kinds have been vaunted as curative and preventive, little benefit is to be expected from them, but unquestionably excellent results are often obtained by a sojourn at Carlsbad, Marienbad, Homburg, Kissingen, or Harrogate, where a course of the mineral waters may be associated with bathing and hydropathy. Brunton strongly recommends the diuretic waters at Evian, near to Geneva, and prescribes for home treatment the following powder, to be taken every morning in a large tumblerful of water:

R. *Sodii Nitritis* gr. ss.—gr. ij.
 Potassii Nitratis gr. xx.
 Potassii Bicarbonatis gr. xxx.

The High-frequency Current as a means of relieving the increased arterial tension has of late years found many supporters, and excellent reports are published. In one case under the writer's care marked temporary benefit was obtained, but unexpected failure of compensation set in soon afterwards which, however, may not have been due to the treatment.

The third type of arterio-sclerosis, as defined by Allbutt, is the *senile* or *involutionary*. This degenerative type does not correspond with any of the clinical stages of the disease as described by Huchard, but it may at any time become accentuated by the supervention of the toxic or of the hyperpietic. As its cause probably lies in far-off hereditary influence or congenital dystrophy, little can be expected from the administration of drugs, especially as in these cases the tension is but slightly increased. That the condition is not incompatible with long life may be vividly realised by the interesting research made upon the arteries of some of the Pharaohs including Menephtah and others who had lived to very advanced ages, the bloodvessels in the mummies of these veterans being found by Professor Elliot Smith in the condition of rigid calcareous tubes.

When the condition is duly recognised from its family and

individual history and from the absence of the causal factors usually found to be present in the ordinary high-pressure type of sclerosis, the only treatment to be adopted is the one of so regulating the life of the patient as to shield him from those influences which tend to increase arterial tension, as in the management of angina pectoris. It is obviously irrational to depress the action of an already unsound heart by reducing the dietary below that which is necessary to sustain life, especially when the victim, as is often the case, has always been a spare eater or frugal liver. At times it may be necessary to strengthen the enfeebled ventricle by Strychnine, or in the presence of accidental high tension to administer cautiously a vaso-dilator or strong saline purgative.

The treatment of any underlying condition must not be lost sight of in the general management of all cases of arterio-sclerosis. Thus Bright's Disease will give indications for eliminatory measures, and obesity, diabetes, or glycosuria for dietetic correction.

In the arterio-sclerosis of syphilis much good may be expected if the case be met with in the earlier stages by the vigorous use of Iodides in large and long continued doses, and always when the renal organs are sound the treatment should be commenced with Mercurial inunctions, which may be cautiously repeated during the intervals when the iodides are necessarily suspended from time to time.

ARTHRITIS DEFORMANS—see Rheumatic Arthritis.

ASCARIS LUMBRICOIDES.

The preventive treatment of this very common round-worm is always efficacious; the drinking water should be boiled or filtered, and all uncooked vegetables or salads should be thoroughly soaked in strong salt solution, and washed with care by a strong stream of running water.

Santonin meets every requirement once the patient is known to be the host of the parasite. After a gentle purge or moderate fast, 5 grs. of the drug may be administered to an adult, or 2 grs. to a child 2 years old and upwards. It should always be administered in fine powder, and mixed with a teaspoonful of Castor Oil; in this way the untoward cerebral symptoms, as convulsions and vertigo, may be entirely prevented. If purging does not follow, any mild cathartic like Syrup of Senna may be given, and the worm is usually dead when expelled. The writer has never once seen dangerous symptoms follow the use of santonin when combined with castor oil as prescribed by him in several thousands of instances in the large extern department of a children's hospital.

When a child cannot be made to take the oil, santonin may be well mixed with butter and a little Calomel and administered

with bread as a thin sandwich. Yellow vision and orange-red discoloration of the urine are common results, but these always pass off within 24 hours, and need excite no uneasiness. Rhubarb is a commonly used adjuvant, but to young children it is always a nauseous and unnecessary combination.

The examination of a minute particle of fæces will show the ova of the parasites if all have not been expelled, but usually one dose is sufficient.

Ascaris mystax is to be treated in the same way, and with similar dosage.

ASCITES.

The large accumulation of peritoneal fluid to which the term ascites is usually applied is the secondary result of some change within the liver itself, as in cirrhosis, and the congestion caused by mitral disease, or of the pressure of malignant growths or tumours outside the organ on the portal vein, or to obliteration of the venous channel itself. In a few cases it is the result of tuberculous or other form of inflammation affecting the peritoneal membrane, and in rarer cases it is caused by rupture of the thoracic duct or lacteals. Seldom is the term ascites properly applicable to the moderate accumulations occurring as a local manifestation of the general dropsy met with in renal diseases.

The treatment of ascites in the first instance must be directed to the removal of the primary cause, and this will obviously consist in the exhibition of the remedies suitable to the management of the different diseases which will be enumerated under their separate headings.

When remedial agents directed to the primary condition fail to remove the accumulated fluid the physician may attempt to treat it as a local dropsy, and for the purpose of causing its absorption he may stimulate the local absorbents by using counter-irritants, like Iodine or Cantharides, or by administering "absorbent" drugs like Iodides and mild Mercurials. Recently the suggestion has been made and carried into practice of treating ascites by auto-seropathy, 5 c.c. of the ascitic fluid being injected subcutaneously as a diuretic agent. As a rule little is to be expected from such agents, and the same may be said of the treatment by Saline Purgatives, Diuretics and Diaphoretics, and of the plan of withholding liquids from the dietary of the patient. Failing these there is nothing left but the operation of tapping when the accumulation is large enough to cause discomfort or threatens to render breathing difficult. By evacuating the fluid life will be prolonged in the worst cases, and in a few instances early and repeated tappings have been known to permanently relieve cirrhosis of the liver.

The patient if weak may have the operation performed in bed, but it is more satisfactory to place him in a chair after the contents of the bladder have been voided or removed by cathe-

terisation. A broad binder having been loosely applied to the abdomen with the view of exerting pressure by traction on its ends during the withdrawal of the fluid, the surgeon having percussed the middle line and found complete dulness between the umbilicus and pubes makes a minute incision into the sterilised skin midway between these points, through which he thrusts a trochar and canula. On withdrawal of the trochar, the fluid is permitted to flow, pressure on the walls being made by drawing on the ends of the bandage. There is no advantage in using a large instrument, and some operators prefer a minute tube of the Southey type with rubber attached, through which the fluid may be allowed to slowly flow into a basin as the patient lies on his back or either side in bed.

After the peritoneal sac has emptied itself, the opening is closed by a little lint soaked in Friar's Balsam, and kept in its place with a strip of plaster. A dry diet will usually considerably delay the return of the accumulation.

When, after repeated tapplings, the speedy reaccumulations of the fluid prove that there is nothing more to be hoped for than palliation of the condition, the surgeon may be requisitioned to perform a radical operation. This is obviously only admissible when the primary disease is not of a malignant nature, and it has afforded permanent relief in many cases of hepatic cirrhosis when undertaken in the early stages of the disease before the patient's peritoneum has lost its absorptive powers by the supervention of inflammatory thickening. It consists in establishing an artificial anastomosis between the general circulation and the portal system as recommended by Talma and carried out by Morrison. A small incision should open the abdomen above the umbilicus, and after the fluid has been entirely evacuated, a portion of the omentum is drawn up and sutured to the parietal peritoneum and recti muscles. It is necessary to insure thorough drainage in order to permit of as complete union as possible between the omentum and abdominal parietes. Some operators at the same time rub forcibly the surface of the liver and the adjoining internal surface of the abdominal wall and stitch them together, in order to encourage the formation of adhesions, in which new vessels will form and still further assist the anastomosis. Cutting the portal vein and suturing its distal end to the vena cava has also been performed.

Mauclaire has tried a new method by which the ascitic fluid is drained into the subcutaneous connective tissue. After tapping through a large incision, he fixed a T-tube, the long end of which dipped into the pelvis, whilst the short arms were buried in the subcutaneous fatty tissue at the wound. The results were, however, very disappointing.

Chylous ascites can only be palliated by repeated tapplings, and these should be delayed as long as the patient's sense of discomfort is not seriously drawn upon. Obviously there is

little to be expected from the Talma-Morrison operation in such cases, or where the condition is due to syphilitic gummata, which often may be made to yield to large doses of Iodides and short courses of Mercury.

ASPERGILLOSIS, PULMONARY.

The treatment of this rare malady, which is caused by the inhalation of a fungus existing on various forms of grain, is in the main the treatment of pulmonary tuberculosis. The truth of this statement will be obvious when the pathology of the disease is remembered, since there are good grounds for believing that in the great majority of cases the *aspergillus fumigatus* fungus only attacks the lung substance after a nidus for its growth has been prepared through the ravages previously made by the bacillus of tubercle.

The removal of the patient from the source of infection is an obvious necessity; the habit of pigeon and bird fanciers of chewing seeds in their mouth before feeding the young birds with them is a common cause of the danger of which they should be warned.

The only drug believed to possess any action over the growth of the fungus is Iodine in the form of its sodium or potassium salt in large doses given as in actinomycosis.

ASPHYXIA.

This condition is the result of many widely differing causes, and the treatment of the primary affection will be found under such headings as Drowning, Laryngitis, Glossitis, Bronchitis, Sunstroke, Poisoning by Chloroform, and Gas, Air Passages, Foreign Bodies in, &c. The main indication is for artificial respiration after the obstruction in the air passages has been removed. The various methods of carrying this out are fully described under Drowning.

In asphyxia caused by heart and lung disease, where death is threatening from the overburdening of the right auricle and ventricle, a prompt and free incision into a vein at the elbow will often save life. The venesection may advantageously be followed up by Oxygen inhalations, and these in the suffocation caused by acute bronchial affections may remove the asphyxia without blood-letting if used as soon as cyanosis appears. The new method of injecting Oxygen hypodermically has given surprisingly good results. A small quantity may be injected direct from the cylinder every hour or less. Saline purgatives in less urgent cases act like a small venesection, and Ozonic Ether may be given with advantage.

In the strangulation caused by hanging the obvious procedure will be instantly to cut down the victim, remove all constrictions about the neck, and begin artificial respiration which should be kept up for a long period, working with deliberate and slow

exertions till after signs of returning animation show themselves. If air cannot be made to enter the chest tracheotomy may be required. Oxygen, if at hand, should always be employed. Laborde's method of making forcible and rhythmical traction on the tongue is a valuable method of exciting the respiratory centre.

In the asphyxia of newly born infants all mucous discharge should be removed from the mouth and pharynx, and by dashing alternately cold and warm water on the chest and face, respiration is usually excited. If these measures and artificial respiration fail the lungs should be inflated through a large catheter, or in desperate urgencies by the physician blowing in air from his mouth. Where the upper air passages are blocked a catheter should be inserted into the glottis till its point is about $3\frac{1}{2}$ inches from the teeth, when a forcible blast of air sent through the instrument will force any blood or mucous discharge upwards into the mouth. The catheter should be passed as the child lies on its back with the head hanging over the edge of a table.

In the traumatic asphyxia and cyanosis produced by thoracic compression, where the patient has been squeezed in a surging crowd, or buried under the weight of fallen earth or masonry, the first step should be the administration of remedies to combat shock. Artificial respiration should not be attempted in the presence of broken ribs and other serious structural injuries.

With the treatment of asphyxia or strangulation by the different methods of artificial respiration Laborde's plan may be combined and electrical stimulation used at the same time, but these should only be employed in a rational manner with due consideration of their simultaneous effects upon the natural rhythm of the respiratory movements.

ASTHENOPIA.

When the patient complains of inability to continue the use of the eyes for near work as reading and sewing owing to blurring of the objects, browache, &c., the cause may be simply due to follicular conjunctivitis, which may be recognised by everting the lower lid when the rows of swollen lymph follicles will come into view on the lower fornix of the conjunctiva. An ointment of 10 grs. Sulphate of Copper to 1 oz. Vaseline will usually give speedy relief or a 1 gr. per oz. solution of Zinc Sulphate may be used.

In accommodative asthenopia the affection is usually due to hypermetropia, the overworked ciliary muscle being unable to meet the demands made upon it, and the obvious remedy will consist in the use of suitable convex glasses. Myopia and astigmatism will likewise demand suitable correction in other cases.

Attention must in all cases be given to the general health of the patient, and he must only be permitted to work in a proper light and in a proper attitude, and all overwork of the eyes should be strictly guarded against.

The treatment of asthenopia caused by insufficiency or weak-

ness of the external ocular muscles will consist in the correction of any errors of refraction which may be present, after which the defective power of the muscles can be overcome by suitable prisms and systematic exercise of the weakened muscles. Pilocarpine or Eserine solutions may be occasionally instilled with the view of stimulating the ciliary muscle. In the obstinate muscular asthenopia met with in neurasthenic subjects, the treatment of the underlying neurotic condition will require close attention. The writer has found unmistakable benefit to follow the instillation of a 1 to 2 per cent. solution of Sodium Formate two or three times a day.

Where the asthenopia is retinal, or depending upon some exhaustion of the general nervous system, as may be seen after recovery from serious illness, the eyes should as far as possible be rested from all close work, and, if there be any photophobia, light should be modified by the use of smoked glasses. Every means of restoring the general health should be attended to, and the treatment recommended for amblyopia be used, *i.e.*, hypodermic injection of Strychnine, with Iron and Quinine internally at the same time, or large doses of Easton's Syrup may be prescribed. The spasms of accommodation may be relieved by Cocaine or Atropine occasionally dropped into the eye.

ASTHMA.

An underlying neurotic condition is probably always present, and the exciting causes which bring the spasmodic mechanism into play are very numerous. The first step in the management of an asthmatic patient is to try and find out the chief exciting cause which determines the attack; this is of the greatest importance in young patients, as each spasmodic seizure probably renders the reflex mechanism more sensitive to subsequent stimuli. Perhaps the most common cause is a catarrhal attack originating in the upper air passages or larger bronchi, and though every effort should be made to guard against undue exposure to cold and damp air, coddling should be avoided. The opposite extreme of submitting the child to so-called "hardening" influences by light clothing, cold baths in winter, and unreasonable exposure must be carefully guarded against when a warm and equable climate cannot be selected in which atmospheric changes may be safely disregarded. Carefully planned respiratory gymnastic exercises are always valuable.

The condition of the nose and naso-pharynx, tonsils and throat should be carefully examined in every instance in the child or adult, and any unhealthy state remedied at once so as to admit of free passage of inspired air. It will also be judicious to see to the state of the teeth. Enlarged tonsils, polypi, adenoids, thickening of the membrane over the turbinated bones as is seen in hypertrophic rhinitis should be removed, as all these conditions tend to the production of recurring catarrhs. The use of the

knife and cautery for this purpose is not to be confounded with another form of treatment based upon the fact that spasm of the bronchial tubes can be produced by stimulation of certain sensitive areas on the mucous membrane of the nose. Hence Francis of Brisbane has advocated the cauterisation of the mucosa of the septum, even when no pathological condition is found there. The writer has seen permanent benefit follow this treatment in many instances where there were no indications of the asthma being of nasal origin.

The next most common exciting cause of the attacks appears to be some abnormal condition of the gastric or intestinal mucous membrane, and the theory has been promulgated that there are hypersensitive areas in these regions like those known to exist in the nasal mucosa. The fact is proved by clinical experience that an overloaded stomach, an attack of acute dyspepsia, or even the presence of intestinal parasites sometimes brings on an asthmatic seizure, recurrence of which is prevented by regulation in the hours of feeding and a revision of the dietary, or by the use of anthelmintics to clear out round-worms, &c.

There can also be little doubt that the gouty condition of the blood may precipitate an asthmatic attack possibly by rendering these areas so hypersensitive that ordinary stimuli may be sufficient to cause spasm of the bronchial tubes.

The inhalation of various emanations and of dusty particles of many kinds is a well-recognised exciting cause. Thus the odours arising from cats, dogs, birds, or certain flowers, and the dust which clings to feathers may be found on careful scrutiny of the history of attacks to be causative. Many patients experience immunity for long periods whilst avoiding the use of feather-beds.

Obscure atmospheric conditions apart from dust-laden air are known by common experience to be active, and it is a well-recognised fact that many asthmatics enjoy freedom from attacks in the dusty air of cities, while a removal to a pure seaside or country atmosphere is followed in such patients by a series of severe spasmodic seizures. Even removal from one part of a city or country district to a place a few miles away may markedly alleviate or increase the number of the attacks. Only the knowledge gained by the patient himself can be utilised in the treatment of the disease by change of air and climate, and no theory of the physician as regards absence of dust, variations of barometric pressure, sunlight, ozone, temperature, &c., can enable him to foretell the probable results of a change of residence.

Treatment of the Asthmatic Paroxysm.—Nitrite of Amyl and Ethyl Iodide inhalation often gives speedy relief to some patients, and if at hand they should always have a trial; Chloroform may be used in the same way. A moderate dose of Morphia hypodermically always affords relief, but obviously its frequent use is unjustifiable; and the same may be said of Cocaine. Atropine $\frac{1}{100}$ gr. is equally beneficial and not open to the serious

objections which maintain in the case of opiates; it should be given hypodermically. Adrenalin, recommended by Cohen, has often a surprisingly rapid effect upon the spasm when given hypodermically in a dose of 5-10 mins. (1 in 1000 solution); when used as a spray its effects are also sometimes surprising. Where the attack is the result of an overloading of the stomach $\frac{1}{10}$ gr. Apomorphine may be given, and it sometimes cuts short the spasm without causing vomiting.

Of the innumerable fumigating compounds intended to be used after ignition, the basis of nearly all of these is Nitrate of Potassium. The simplest method of carrying out this treatment consists in burning blotting or coarse brown paper which has been previously soaked in a saturated solution of the drug and dried. As soon as the air of the patient's room has become permeated by the smoke of this combustible, so that an onlooker begins to feel great difficulty in breathing the fumes, the asthmatic will simultaneously commence to show amelioration of his spasm and dyspnoea. The common mistake is made of not burning enough of the paper, and of not using a strong solution for its preparation. Huggin's Ozone Paper contains Iodide of Potassium along with the nitre, and Thorogood recommended the addition of Chlorate of Potassium in order to make it burn more actively. Infusions of Belladonna, Digitalis, Sage, Green Tea and Stramonium have been also used as the solvent for the nitre.

Stramonium Leaves with Nitre form the basis of the majority of the powders used as asthma cures, as those known as Himrod's, Bliss's, Ellis's, Girdwood's, &c.; Sir James Sawyer recommends 1 oz. Nitre, 2 oz. Stramonium, and 1 oz. Anise fruit in coarse powder; and another formula of his consists of Stramonium 16, Sublimed Sulphur 1, Anise 7, and Nitre 8. The B.P.C. Pulvis Stramonii Co. is also prepared from a Sawyer's formula and contains the following powders: Stramonium 50, Lobelia 6, Anise 12, Tea 6, Oil of Eucalyptus 1, and Potassium Nitrate 25, and is perhaps the best of these compounds. It is used by pressing about a teaspoonful of the powder into a cone with the finger-tips, and lighting the apex with a lucifer match. A very convenient fumigation which can be easily prepared by the patient is Stramonium Leaves soaked in a strong solution of Nitre and dried; these can be lighted when required and the smoke inhaled.

Martindale's Compound Asthma Fluid is intended to be used by means of an atomiser, and as it contains some Atropine it may be used with benefit in those cases which yield to this drug when administered hypodermically. Tucker's cure contains cocaine and nitrites and some atropine.

Some patients prefer to use stramonium, and lobelia mixed with tobacco in a pipe or as a cigarette, and the addition of tobacco and a little nitre intensifies the action of these drugs. *Datura Tatula* (a solanaceous plant) chopped up and smoked

in a pipe sometimes relieves when other inhalants fail. Arsenic has been added to stramonium, tobacco and lobelia in the cigarette form, but its continuous use is open to serious objection.

Pyridine is an ingredient of tobacco smoke, and the purified liquid obtained from bone oil has been used by Sée for the relief and prevention of Asthmatic seizures—a teaspoonful being poured upon a plate in a small room the air soon becomes impregnated with its disagreeable odour, and the patient often finds relief by breathing this nauseating atmosphere.

Steam, Oxygen, Compressed or Rarefied Air, sprays of Eucalyptus, Creosote, Cajuput, Friar's Balsam, Conium, Cocaine, Phenol, &c., have their advocates.

Of internal remedies used for the relief of the paroxysm all usually are too slow in their action unless, as already mentioned, they be given by inhalation or hypodermically, but sometimes Hyoscine acts speedily ($\frac{1}{150}$ gr. by the mouth), though it also is better given hypodermically. 30 grs. Chloral Hydrate in a draught or a full dose of Cannabis Indica prove useful if given at the beginning of an attack before the breathing becomes very laboured.

Caffeine is a favourite with some patients, but it is liable to aggravate the insomnia which is nearly always present; it is best given in the form of a large cupful of strong black Coffee.

The ethereal tincture of Lobelia, if pushed till nausea supervenes, is often of use, but it is a drug of great power, and may seriously depress the heart.

Cocaine applied in solution brushed over the nasal mucosa is sometimes very valuable in cases of nasal origin, but it also must be used with caution.

The strong induced current is recommended by Yeo, who places the electrodes over the pneumogastrics below the angle of the jaw in front of the sterno-mastoids; pressure with the fingers or ice-bags laid over the course of the pneumogastrics act in the same way. A blister over this region is more reliable but much slower in its effects.

Grindelia, Gelsemium, and Euphorbium Pilulifera alone or combined with Nauseating Expectorants or Trinitrin are employed in some cases with marked benefit, and Alum in 15-gr. doses laid upon the tongue has its advocates.

From the above formidable list which represents but a small proportion of the agents recommended for the relief of the asthmatic paroxysm it will be obvious that the treatment is largely empiric. One remedy after another must be tried till the drug is found which gives most speedy succour, and this as a rule may be relied upon in future attacks in the same individual. Towards the end of the attack as expectoration begins to show itself expectorants in full doses hasten the clearing off of the spasmodic condition.

Treatment during the Intervals between the Attacks.—As already

mentioned in speaking of the preventive treatment of the paroxysm, the cause of the attack when found must be carefully avoided. The regulation of the asthmatic's dietary is of importance, quantity being often a more serious matter than quality. The chief point is the regulation of the hours of eating, so that a very heavy meal after a long fast is never to be indulged in, hence the necessity of doing away with the boa-constrictor plan of one enormous meal in the day late in the evening, and the substitution for it of a light repast every 4 or 5 hours. As a rule animal food should be sparingly used, fish and chicken with fresh vegetables and cereals meeting all requirements; wines and beer are objectionable. Constipation must be carefully guarded against. When his means permit, climatic treatment, especially for the spring and winter months, should be considered, and from the remarks already made the physician will readily appreciate the possibility of making serious mistakes in sending the asthmatic patient on long journeys in search of health when his best sanatorium may be but a few miles from his usual residence. Nevertheless there are a few guiding principles worth consideration: thus where the asthma is obviously of the catarrhal form a warm, sunny, equable climate suitable for bronchitis should be selected, and Mount Doré and Bourboule in Puy De Dome are favourite resorts, whose waters also contain arsenic. Where already there is much emphysema, a suitable spot in the Riviera may be selected as Cannes or Grasse. Where the diseased condition has developed in a low-lying damp region a high elevation Alpine resort usually does well for young patients, but old emphysematous cases fare badly in these regions, and as pointed out by Hadley, the climatic treatment of the bronchitis and emphysema is of more importance than the consideration of the asthma in very chronic cases. The presence of renal complications, rheumatism, and gout furnish clear indications for the selection of a suitable climate, and where there exists marked cardiac dilatation, a course at Ems or Nauheim often is most beneficial.

Of drugs suitable for administration during the intervals between the attacks there are two about whose value in most cases there can be little doubt, and these may be given as a routine—viz., Iodides and Arsenic. The following mixture may be employed:

R. *Sodii Iodidi* ʒiij.
 Liquor. Arsenicalis ʒiss.
 Vini Ipecacuanhæ ʒvj.
 Tinct. Belladonnæ ʒij.
 Aquæ Chloroformi ad ʒvj. *Misce.*

Fiat mistura. Sumat coch. min. bis in die ex aq. p.c.

During the attack the above may be given every two hours if the Fowler's Solution be replaced by 3iv. Tinct. Lobeliæ.

After a few months of the above routine the iodide alone may be given every other month alternating with a month's treatment by arsenic only.

ASTIGMATISM.

This affection is due to inequalities in the refracting surface, the cornea generally being at fault, and it can only be remedied by the use of cylindrical lenses which correct the unequal refraction of entering rays in the two chief meridians. Regular simple, regular compound hypermetropic and myopic astigmatism and mixed astigmatism all require careful correction, and there is extreme difficulty in correcting irregular astigmatism. The serious nerve symptoms which follow eye-strain will often demand immediate correction by means of suitable glasses, and many patients obtain immunity from migraine and other forms of severe headache permanently or for long periods after being fitted with proper cylinders.

ATAXIA—see **Locomotor Ataxia**.

ATHEROMA—see **Arterio-sclerosis**.

ATHETOSIS.

The lesions to which is due the slow irregular rhythmical mobile spasm constituting this condition being usually of old cerebral thrombotic or embolic origin little can be expected in most cases from the use of drugs. Whilst the general health receives careful attention, something may be done by well regulated gymnastics and local massage to aid the nutrition of the affected muscles or limbs. Gowers has obtained marked benefit by the systematic and persevering use of the continuous current, the positive pole being placed on the spine or brachial plexus, and the negative on the affected muscles. Where there is evidence of marked irritation about the area of softening or degeneration in the original lesion, large doses of Bromides alone or combined with Iodides, Arsenic or Conium may be occasionally used.

The new operation of resecting the posterior roots of several of the spinal nerves has given excellent results in this hitherto incurable affection. The site of the resection and the number of the roots to be divided will depend upon the situation of the muscles affected. Cross-legged progression has been entirely removed by division of the second, third and fifth lumbar nerves. The injection of strong Alcohol into the trunks of the affected nerves has also caused the disappearance of the spasms, but these are liable to return after a shorter or longer period.

BALANITIS.

Where this is part of a gonorrhœa, rarely will it be necessary to do anything but inject Permanganate of Potassium (1 gr. to 2 oz.) round the glans and also down the urethra, curing both complaints at the same time. If there be much pain and redness, a Lead and Opium lotion applied outside on lint gives relief. Acupuncture is generally bad practice. Should there be a chancre or sore or ulcer causing hæmorrhage, one free cut, slitting up the prepuce on its dorsal aspect, should be made, and

Lime Water, Sulphate of Zinc (1 in 100), Boracic Acid (1 in 50), or Carbolic Oil (1 in 15), may be used as a dressing ; or Oleate of Zinc or Boracic Ointment may be applied.

Where balanitis comes on in young subjects with long prepuce, as the result of retained secretion, drawing back of the foreskin and thorough cleansing of all discharge several times daily, dusting the part with a powder consisting of equal parts Lapis Calaminaris, Boracic Acid, and Powdered Starch, soon effect a cure. When the disease is very chronic or apt to return, circumcision should be performed, especially if phimosis be present.

Should the inflammation have lasted long enough to produce excoriations of the membrane lining the prepuce or of the surface of the glans, they should be touched lightly with Nitrate of Silver, Nitric Acid, Carbolic Acid, or Liquor Hyd. Pernit., and covered with a piece of dry lint inserted between the glans and foreskin. Where the prepuce cannot be drawn backwards, a fine syringe should be used frequently to inject Hydrogen Peroxide Solution or a stream of tepid water, coloured with Condyl's Fluid, between the opposed mucous surfaces. Afterwards a weak Corrosive Sublimate Solution (1 in 1,000), or Nitrate of Silver (1 in 100), or Yellow Wash may be injected. If the foreskin can be drawn back, any of these applications may be inserted upon lint and left *in situ*.

The writer has permanently cured many cases by periodically dilating the prepuce with phimosis forceps or dressing forceps after the subsidence of all inflammatory action, even where the orifice hardly admitted a thick probe. When the stretching is done with patience and care, no pain results, and no inflammation follows this method of treating the acquired phymosis ; often the same result may be obtained in congenital phymosis.

BALDNESS.

Generally the cause of the condition is seborrhœa sicca (dandruff), and if the case be got early the baldness can be arrested or cured by the liberal use of animal fats with anti-septics applied after careful cleansing of the scalp with Borax or equal amounts of soft soap and Alcohol and the removal of all traces of the soap before using the pomade. If the baldness be due to senile change, treatment is useless. In ordinary cases

where the health is good, and where there is nothing to give a clue to the cause of the baldness, the treatment will consist of local stimulation to the atrophied hair bulbs.

Galvanism is a good remedy after the seborrhœa has been treated. A slow continuous current passed through the scalp by brush electrodes has a powerful influence over the nutrition of the hair bulbs in their early stage of atrophy. Cutaneous massage, shaving, shampooing, or blistering the scalp may be tried, but the most convenient and effectual plan is by the application of irritants or stimulants in such proportion that actual vesication is avoided, and a chronic congestion or erythema is habitually kept up.

Cantharides is the best agent for this purpose and it may be combined with other local stimulants. The writer has found the following the best combination :

R. *Liquor. Epispastici* ʒij.
 Olei Rosmarini ʒiv.
 Olei Amygdal. Dulc. ʒij.
 Spt. Camphoræ ʒij.
 Glycerin. Boracis ʒj.
 Otto de Rosæ gtt. viij.
 Tinct. Jaborandi ʒj. *Misce.*

Fiat Linimentum. Sig.—"To be well rubbed into the roots of the hair morning and night."

The writer has seen the following pomade produce good results. It may be tried where lotions cannot be used :

R. *Pilocarpinæ Hydrochlor. gr.* xx.
 Aquæ Destillatæ ʒij. *Misce.*

Fiat solutio et adde

Lanolin. Puriss. ʒx.
 Olei Petrolei ("Snowflake") ʒvi.
 Olei Bergamot. ʒss.
 Olei Verbenæ ʒss.

Fiat Unguentum.

Pilocarpine has been also administered hypodermically and by the mouth in various forms of alopecia, and even in universal

baldness. Arsenic certainly has some effect upon the hair when administered internally. Restoration of hair having been observed after the use of Thyroid Extract, M. Morris suggests its administration in baldness.

A safe and mild stimulant is Gull's Linimentum Myristicæ (1 part of Expressed Oil of Nutmeg to 3 of Olive Oil). Erasmus Wilson recommended the following Ammonia stimulant to be rubbed in once or twice a day:—Liq. Ammon. Fort., Chloroformi, Ol. Sesami, and Ol. Limonis, of each $\frac{1}{2}$ oz., and Spirit. Rosmarini to 4 oz.

The Volatile Oil of Mustard, if well diluted, is of some value—Olei Sinapis, 2 drs. ; Olei Petrolei, 1 oz. ; Olei Olivæ, 9 oz. ; misce. Capsicum, Mustard, Euphorbium, and strong Acids have been used, but their application is not to be advised.

For syphilitic baldness, in addition to the usual constitutional treatment, a pomade made by adding 2 drs. of White Precipitate to 4 oz. ordinary Marrow Oil is of value.

All sorts of germicides have been used on the theory of the parasitic nature of baldness. They can only be of use when applied in such strengths as to cause irritation. The best is the White Precipitate pomade, and next come solutions of Salicylic Acid (1 in 20) and of Perchloride of Mercury (1 in 500). Where psoriasis of the scalp is present a weak Chrysarobin ointment (10 grs. per oz) may be used. Walker recommends an ointment consisting of Precipitated Sulphur and Salicylic Acid 20 grs. each to 1 oz.

The growth of hair, as pointed out by Crocker, is always largely dependent on the general vigour; and no matter what local agents are employed, the general health must be closely looked after. The patient should be advised to wear head covering as seldom as possible, and never when indoors.

ALOPECIA AREATA.—In the treatment of this condition one set of authorities, considering the disease to be of nerve origin, recommends remedies for improving the general health and tone of the nervous system in particular, as Iron, Strychnine, Arsenic, Phosphorus, Sulphur, Massage, &c., with generous diet of fats, phosphates, crushed wheat and fish, and the local application of the Faradic or Continuous Current, Hypodermics of Pilocarpine, and the host of rubefacients from Oil of Mustard, Cantharides, and Croton Oil to Iodine. Every remedy useful in ordinary seborrhœic baldness has its advocates, but the majority of observers agree that Vesication affords the best results and it does not seem to matter much how the blistering is effected.

Other dermatologists believe that the disease is parasitic, and they recommend that remedies to be effective must be germicidal, consequently nearly every agent valuable in ringworm has its advocates, and the literature of the subject has become more extensive than the disease appears to justify.

The X Rays and Phototherapy have given marked results,

and several cases have been cured by the High-Frequency Current.

A 3 per cent. Solution of Creolin is applied to the entire scalp by O.-Dumesnil, and to the patches he rubs in a 1 gr. per oz. Sublimate Ointment. Leistikow applies a 25 per cent. Chrysarobin Stick. Many authorities apply pure Carbolic Acid to the patch, and some speak strongly of the value of Iodized Collodion, Oils of Cade, Wintergreen, and Cinnamon, and 1 per cent. Ointment of Biniodide of Mercury, and Trikresol. Crocker succeeds best with 1 to 5 grs. Sublimate, 1 dr. Spirit, and 7 drs. Turpentine or Ol. Pini Sylvestris. Walker recommends a lotion containing 5-10 per cent. Lactic Acid with Castor Oil in Alcohol.

A study of the numerous reports of these various anti-parasitic remedies shows that the best results are constantly obtained by those agents which cause the most irritation.

Pernitrate of Mercury in strong solution, lightly brushed over the spot, often succeeds, and the writer has seen better results from painting over the patches with strong Sulphurous Acid than from any other treatment, save constant blistering with Liquor Epispasticus. The rare form of baldness produced by Folliculitis Decalvans is best treated by epilation of any remaining hairs, after which the scalp should be thoroughly washed and Liquor Iodi applied repeatedly or a weak ointment of Iodide of Sulphur rubbed in. When the parasitic organisms have been destroyed a Cantharides preparation should be used to excite stimulation of the atrophied hair bulbs, but the baldness is often permanent in spite of all treatment.

BEDSORES.

Preventive treatment is of primary importance, and since the sores are almost invariably secondary to some bedridden condition the attention of the physician and nurse should always be directed to the possibility of their supervention in prolonged fevers, paralysis, fractures of the femur, &c.

As the main cause is continuous pressure over some bony prominence, the patient's position in bed will demand regular changing several times a day and occasionally through the night as well, so as to avoid the pressure caused by the weight of his body being exercised for any length of time upon a particular part of the skin. Air or water cushions or extemporised pillows or small cushions stuffed with well-teased-out sheeps' wool having a central opening opposite to the bony prominence will be required. Smooth and creaseless linen draw-sheets should take the place of mackintoshes, as next to pressure the irritation of sweat and other secretions is a fruitful source of this opprobrium to nursing. The skin must be kept as dry as possible, and all parts of the patient's body in close contact with the hair mattress should be thoroughly cleansed at least twice a day with soap and water, and after carefully towelling they should be bathed with methylated spirit, whiskey, or eau de Cologne, which is

permitted to dry spontaneously. If incontinence of urine or faeces is present it is needless to say these operations must be carried out very frequently through the day and night. After the ablution has been finished, finely powdered Boric Acid, Fuller's Earth, Prepared Calamina or Talc should be gently rubbed into the parts.

In some patients with abnormally dry skins, after the cleansing process has been completed, a little Lanoline may be advantageously used instead of the dusting powder ; it is in such cases that creases in the sheets and the irritation caused by bread crumbs are liable to cause minute abrasions ending in sores. The *acute* sloughing bedsore, which follows spinal injuries, can only be effectually prevented by the early use of the water bed.

If permanent redness of the skin has already appeared, sometimes painting of the erythematous area with Flexile Collodion may avert the threatening abrasion, but if this has already occurred a piece of Soap plaster spread on soft chamois, or the application of an ointment of Zinc Oxide with 10 or 15 grs. to each ounce may prevent the abrasion developing into an ulcer if all moist applications be discontinued.

When the sore has already formed, the first step is to thoroughly cleanse it of all dead matter, and though the large sloughing gangrenous surface may sometimes require the application of a warm linseed poultice, in most cases a Boric Acid compress composed of several layers of lint soaked in a warm saturated solution of the drug is a better and safer remedy. As soon as the separation of all sloughs has been effected the granulating surface should be treated on general surgical principles, by the use of weak astringent and antiseptic lotions, as Alum (1 in 100), Boric Acid (1 in 50), Carbolic Acid (1 in 40), Spirit (1 in 3), Corrosive Sublimate (1 in 500). These require to be covered over with oiled silk, and occasionally the retained secretion under the silk and beyond the moistened edges of the lint tends to irritate the healthy skin, in which case dry dressings, Iodoform Gauze, powdered Boric Acid, &c., may be substituted.

For most cases where the sore is small, ointments are more suitable, and the official Boracic, Zinc, Carbolic, or Salicylic, or Iodoform unguents may be employed. In slowly healing or sluggish sores a pomade consisting of equal amounts of Basilicon Ointment and Balsam of Peru is a valuable preparation. Under the heading of Ulcers various other formulas will be found, any of which may be tried when the above mentioned remedies fail. During the healing process the part must be kept free of all pressure by the use of the ringed sheepswool cushion already mentioned.

Bird's method of healing chronic bedsore in paralysed patients has been found by the writer to be efficacious after the failure of ordinary treatment. It consists in the application of a thin sheet of silver laid on the granulating surface of the ulcer ; the

silver has attached to it a bent wire of the same metal which is soldered to a small disc of copper at its other extremity ; this is laid upon the healthy skin over a piece of wash-leather or lint moistened with vinegar. The resulting galvanic action usually excites rapid healing.

Scraping or excision of the slough followed by the application of pure Carbolic Acid is sometimes resorted to by the surgeon where there is evidence that septic absorption is threatening or has already occurred.

BERI-BERI.

The treatment of this interesting disease cannot be finally settled till its pathology is further cleared up ; everything points to its microbic origin. Tsuzuki believes in the diplococcus which he has isolated, and maintains that the disease is infectious and can be carried from one locality to another. The various theories about the influence of unwholesome rice, overcrowding, &c., can be safely disposed of by regarding these as predisposing and not as the exciting causes.

Those who regard beri-beri as a "*Place*" disease insist that the first step in the treatment should be the removal of the patient to a different locality in a higher and drier region, where abundant ventilation and better hygienic surroundings are obtainable. There cannot be a doubt about the value of the results obtained by this practice regardless of all theories of causation. Those who look upon the malady as a "*Food*" disease, the result of a toxæmia produced by the use of *uncured* rice or deteriorated grain, insist upon the importance of a change of diet. Rice, according to Fletcher, which has been boiled and dried before being milled (cured rice) does not produce the disease. Fresh vegetables, beans, and wheaten food with fats and nitrogenous foods should be administered. By combining the place and food methods the best preventive and curative treatment is obtainable in both the epidemic and endemic forms of the disease.

The symptoms of peripheral neuritis and anasarca afford clear indications for treatment, though no known drug can be said to possess any specific action ; minute doses of Antipyrine or Nitrate of Silver, and in the dry form of the disease the latter drug combined with Belladonna have proved valuable. Absolute rest in bed for long periods is essential owing to the danger of the cardiac dilatation through implication of the vagus which is usually present. Strychnine hypodermically with inhalation of Nitrite of Amyl, and even venesection may be demanded.

Diuretics are indicated where the anasarca is abundant, and these should be combined with Digitalis and Quinine or with minute doses of Trinitrin. Massage and Electricity, with passive movements of the joints, should be practised twice daily after the subsidence of pain and muscular tenderness, before the patient is permitted to leave his bed.

BILHARZIA HÆMATOBIA.

This parasitic fluke, common in Egypt and South Africa, gains its entrance to the body during bathing, probably through the urethra, and also through the mouth in drinking water, cresses, and fresh-water molluscs. Preventive treatment is therefore obvious; all water should be boiled and filtered, and uncooked vegetables and shellfish forbidden.

As the male trematode resides in the veins of the portal system and the female infests the urinary tract, its ova reaching the bladder and rectum, it is beyond the reach of the ordinary anthelmintics, though in Cairo the usual practice is to administer Male Fern. Methylene Blue and the newer Arsenical compounds have been tried, but with little success. The writer's suggestion in a former edition of this work has as far as he knows never been tried. It was to saturate the blood several times with chloroform or ether vapour as in prolonged anæsthesia, with the view of causing the death of the parasite. The X rays have recently been reported upon as giving encouraging results. Symptomatic treatment is all that is usually attempted; the bladder irritation and hæmaturia should be allayed by washing out the organ with saturated Boric Acid Solution, and the calculi which are liable to form should be crushed or otherwise removed. Rectal polypoid or papillomatous growths should be removed when these are causing much pain and hæmorrhage.

BLACKWATER FEVER.

The pathology of this highly interesting tropical or subtropical disease is still the subject of serious debate, and the treatment must be, therefore, mainly symptomatic. Several points have, however, been cleared up which have a practical bearing upon the use of remedial agents for the relief of the most prominent symptoms of the disease. Thus it must be accepted that it is of malarial origin, since malarial parasites have been found in 95 per cent. of the cases investigated by Stephens; but as the condition of hæmoglobinuria characteristic of blackwater fever is only seen in a small number of severe malarial fevers, it is obvious that some unknown factor capable of producing dangerous hæmolysis must be also present when the condition known as blackwater fever supervenes. Whether this is a toxin (autolysin) produced in the patient's body, as maintained by Christophers and Bentley, or whether it is a toxin elaborated by some unrecognised malarial or other parasite cannot be at present demonstrated.

One thing is certain—viz., Koch's view is no longer tenable that the disease is simply produced by quinine, since blackwater fever has been repeatedly found in patients who had never taken this drug in any form. It is equally certain, however, that quinine may precipitate an attack of blackwater fever when the hæmoglobinuric condition is present, but which is not of suffi-

cient intensity to produce the characteristic symptoms of the disease.

The patient should be at once put to bed and the fever treated by diaphoretics, and symptoms relieved by approved remedies as they arise; thus vomiting may be met by Morphia hypodermically, the liver and loin pains will require hot fomentations or dry-cupping, and the bowels should be opened by a smart saline purgative. The serious question at once arises: Should Quinine be administered? Some answer this in the affirmative and commence the treatment of the disease in a routine way by administering 5-10 grs. Quinine every 6 hours; others believing that the drug has no specific effect over the hæmoglobinuria in its acute stage hesitate to employ it in this stage, whilst probably all are agreed that the drug must be resorted to for the cure of the disease after the pressing urinary symptoms have been relieved. The writer has had the experience of four typical and severe cases of the disease occurring in individuals just arrived from the tropics, and three of whom bore quinine well. Unfortunately the quinine difficulty is not the most serious consideration for the physician, the great danger to the patient is that of suppression of the urine, and as a rule this is a much more serious complication than the height of the fever.

Barratt and Yorke maintain that urinary suppression is due to mechanical obstruction of the tubes by large epithelial casts. This mechanical plugging causes more or less renal congestion, and unlike what occurs in ordinary paroxysmal hæmoglobinuria the urine shows red blood-cells in half the cases where suppression is about to occur. This fact has a most important bearing upon the treatment. The patient must be poulticed or cupped over the loins, and the skin made to act by the hot bath or by the hot-air bath as in acute Bright's Disease where uræmia is threatening. A large enema of Saline solution should be administered with the view of diluting the toxin in the blood, and of flushing the urinary tubules. When the enema is rejected or in desperate cases, in addition to the enema Saline should be injected into a vein as in hæmorrhages, or into the subcutaneous areolar tissue in different parts of the body, 4 or 6 pints being employed, and there can hardly be a doubt that in some cases life may be by this means saved. In one patient seen by the writer with Dr. Elliott this procedure certainly appeared to prevent death. A strong Saline purgative or a dose of Croton Oil should be administered as soon as the hypodermic injection of the saline solution has been accomplished.

The immediate after-treatment, once the danger of suppression of the urine has been combated, must consist of Quinine, and Stephens affirms that the cure cannot be considered as complete till the patient has been enabled to take 15 grs. without any ill-effects. Any salt of the alkaloid may be given. Celli advocates the tannate by the mouth; others administer the hydrochloride by

the bowel in doses of 15-20 grs., whilst many authorities prefer to give 5-10 grs. of the acid hydrochloride by the skin. Should the hæmoglobinuria have followed the use of quinine in the first instance the drug must be cautiously tried in half the above doses, or its administration postponed for 48 hours. It is advisable not to administer the sulphate, as all sulphates tend to favour hæmolysis.

Vincent has shown that the hypodermic administration of Calcium Chloride renders the employment of quinine safe, and it is a good routine to add the calcium salt to the normal saline solution injected into the bowel, subcutaneous tissue, or veins in the treatment of threatening suppression, though the drug appears to possess no influence over the paroxysms of ordinary non-malarial hæmoglobinuria.

BLADDER, Atony of.

The loss of tone in the muscular walls of the bladder being always the result of over-distension from postponing the act of micturition or from obstructive causes as stricture, enlarged prostate or temporary paralysis as in fevers, the treatment will obviously consist of the removal of the obstructive cause, and the judicious use of a sterilised catheter at regulated intervals. Drugs possess little influence over the muscular fibres of the organ, but Strychnine alone or with Ergot should always have a prolonged trial, and Electricity, in the form of the constant and interrupted current, is undoubtedly useful. The following is a good routine combination: Ext. Nuc. Vom., gr. $\frac{3}{4}$; Ergotin, gr. 1; Quiniae S. and Ferri Redacti, ana gr. 1; in pil. 1 ter in die. Cantharides, in minute doses, may be tried.

Where already the muscular fibres have become the seat of fatty or fibrous degeneration the only available treatment will lie in the future permanent resort to the catheter to avoid distension, and this should be combined with short courses of urinary disinfectants to prevent the supervention of cystitis, which is liable to follow the introduction of germs through some omission at times in the technique of sterilisation of the instrument.

BLADDER HÆMORRHAGE.

The treatment of the primary disease which causes the bleeding is the first consideration; this will be found detailed under its own heading. See also under Hæmaturia.

BLADDER, Inflammation of.

The cause should always be sought for before any line of treatment is commenced, and the removal of this will in many instances render further treatment unnecessary.

Of the causes of *acute* cystitis one of the most common is the extension backwards of a gonorrhœal urethritis. The best treat-

ment will consist in absolute rest in bed with the free use of the hot Sitz bath (temp. 105°) at short intervals, and a $\frac{1}{2}$ -gr. Morphia suppository containing 1 gr. of green extract of Belladonna. If the pain and straining resist these measures, $\frac{1}{2}$ -1 gr. Eucaïne Hydrochloride in 30-60 mins. of water may be injected through a soft instrument passed gently down the urethra. A large linseed poultice to the lower part of the abdomen often gives relief. All injections for the cure of the gonorrhœal urethritis should be stopped till the strangury and tenesmus are relieved. A milk diet with the free use of barley water or linseed infusion and the avoidance of alcohol, coffee and tea should be ordered. A mixture containing Hyoscyamus, Bicarbonate of Potassium, or the Liquor Potassæ with a small amount of Opium can advantageously be given in the linseed infusion. After the subsidence of the acute symptoms, urethral injections of a weak warmed solution of Permanganate of Potassium may be commenced and continued every hour or two, gradually increasing the strength of the solution till 1 gr. per oz. is reached. Oil of Sandal Wood in capsules (10 mins.) is very efficacious. Where the attack of acute cystitis follows the use of a catheter, lithotrite or other instrument, the treatment is essentially the same.

Gout sometimes declares its presence by a severe attack on the mucous membrane of the bladder, when a smart saline purge followed by Colchicum and Alkalies should be administered.

Cantharides applied to any part of the cutaneous surface in the form of a large blister may be absorbed and cause severe cystitis with strangury. The treatment in such cases consists of the use of the hot Sitz bath with large drinks of barley water or other diluents and Morphia by the rectum after the removal of the blister and the letting out of any bullæ. Saline purgatives are indicated in all cases.

Bacilluria is the name given to the condition in which micro-organisms are found in the urine, and their presence sometimes excites acute inflammation of the bladder, even when they have been absorbed from some distant site and eliminated by the kidney as in typhoid fever, and in *Bacillus coli* infection. The treatment of acute cystitis of this type yields to urinary antiseptics like Urotropin (5-10 grs. ter die). In *B. coli* cystitis the acid reaction of the urine must be changed to alkaline by large doses of Bicarbonate or Citrate of Potash, after which Urotropin should be given.

Staphylococcic cystitis is often of the acute type supervening upon retention of the urine from obstructed flow in prostatic enlargement, calculi, stricture and spinal disease. Streptococcic cystitis is still more common, being usually the result of infection by soiled catheters and other instruments, or the organisms may reach the bladder from foci of septic inflammation in the female pelvic organs and from perineal wounds. In many instances the infection will be found to be a mixed one. The

treatment in these cases will consist of urinary antiseptics by the mouth till the violence of the acute inflammation has been somewhat abated, after which the bladder is to be thoroughly washed out or irrigated by Boric Acid or Permanganate of Potassium solution; it is not safe practice to resort to the passage of instruments and irrigation in the presence of a very acute inflammation of the bladder.

In the acute septic cystitis following bladder injuries as well as in the most severe types of acute inflammation just mentioned it may sometimes be necessary to drain temporarily the bladder through the perineum or to continuously irrigate it by Cathcart's apparatus after a suprapubic cystotomy has been performed.

CHRONIC INFLAMMATION OF THE BLADDER.—The treatment of this condition in the first instance as in the acute affection should consist in the removal of the cause when possible. The following are the chief causes usually met with: (1) Prostatic Enlargement, (2) Stone or Foreign Bodies, (3) Atony, (4) Tumour, (5) Stricture, (6) Spinal Paralysis, (7) Gout, (8) Abscess in the uterus or pelvis, (9) Parasites or their ova as bilharziosis, hydatids, &c., (10) Micro-organisms as in *B. coli*, tubercular and typhoid infections, chronic gonorrhœa, &c.

The introduction of prostatectomy by Freyer's suprapubic method has revolutionised the work of the bladder surgeon; the hopeless cases of chronic cystitis formerly met with being now speedily cured by the removal of the enlarged organ. It is only in those neglected instances of the disease where prolonged sepsis has undermined seriously the strength of the patient and impaired his renal organs, or where the presence of serious heart, lung or other vital complications exist that the palliation of his distress by catheterisation, irrigation, and the administration of urinary antiseptics should be resorted to.

Removal of the cause applies to the treatment of cystitis caused by the presence of stone, foreign bodies, tumours, and stricture. Gouty cystitis yields to the constitutional treatment indicated for the uric acid diathesis. Typhoid cystitis, the colon bacillus, and chronic gonorrhœal cystitis yield to the disinfection of the urinary tract by Urotropin or Boric Acid administered by the mouth as in the acute affection. In obstinate gonorrhœal cases there is always more or less prostatitis which may end in abscesses, and often some narrowing of the urethra. The treatment of these cases is often most tedious and disappointing; it consists in the passage of a full-sized solid metal bougie to dilate the urethra after which the urethroscope or cystoscope may be passed to investigate the condition of the prostatic urethral membrane and neck of the bladder. Janet's posterior irrigation after the urethral injection of Cocaine to remove spasm of the compressor urethræ is most valuable; or a soft rubber catheter should be passed till its eye reaches the affected spot (the apex of the

prostate), which is usually about $7\frac{1}{2}$ inches from the meatus, Guyon's method of instillation of the posterior urethra is then carried out by injecting through a graduated syringe a solution of Nitrate of Silver (1 gr. to 1 pint). Any abscesses about the prostate will require incision from the perineum. Massage of the gland through the rectum is of much value in inveterate cases, and Wright's Vaccine treatment by injection of killed gonococci should always be resorted to ; doses gradually increased to 100,000,000 organisms have been injected hypodermically without harm.

Chronic cystitis in which the tubercle bacilli are found in the urine is usually but not invariably due to a local lesion in the genito-urinary tract or renal pelvis. When the cystoscope reveals evidence of tuberculous ulcers (these are generally found in the region of the trigone), little good can be expected from injection into the bladder of antiseptics like Iodoform Emulsion or Lactic Acid. The best procedure in the presence of very severe pain, hæmaturia and tenesmus is to open the bladder above the pubes, curette the growth thoroughly and touch the raw surface with strong Carbolic or Perchloride of Iron solution. There is, however, much danger of the infection of the wound by the bacillus. There need be less hesitation in operating on the female bladder since the patch of ulceration can be reached from the inside after full dilatation of the urethra. In all cases vaccine treatment should be also employed by means of Tuberculin injections, and many surgeons have abandoned curetting and drainage of the bladder for the vaccine treatment after the removal of a tuberculous testicle or kidney when these have been found to be present.

In atony of the bladder when not dependent upon the obstruction of stricture or other removable cause the cystitis present must be treated as in paralytic cases, and a wide selection of agents and drugs is at the command of the practitioner. Since the use of these is indicated in all the chronic types of cystitis whose causes are beyond the reach of operative surgery, they may advantageously be considered seriatim.

First will come the discriminating use of the catheter ; this will be indicated in all cases of atony and paralysis, and its use is imperative where great tenesmus and pain are present from inability of the bladder to expel its contents completely. Where there is a large amount of residual urine found upon the first passage of the instrument it is risky to empty the organ. When it is necessary for diagnostic purposes to completely evacuate the contents, a quantity of Boric Acid solution should be injected through the catheter and left in the bladder to prevent collapse from the altered pressure of the blood in the abdominal vessels.

The frequency of catheterisation will depend upon the symptoms and amount of residual urine present ; the intervals can be

gradually lengthened till a morning and night or 8 hours' rule becomes practicable. A soft rubber instrument is to be preferred when such is passable, and the patient must be thoroughly initiated in the sterilisation of it. The best lubricant for the rubber instrument is the Glycerin. Boracic, which in addition to its lubricating properties possesses antiseptic virtues, and it tends also to preserve the rubber elasticity intact, whilst oils are liable to cause brittleness. When it is found necessary to tie the catheter in position for any length of time, a rubber instrument when possible should be selected.

Washing out of the bladder will be necessary in all cases where the urine is putrid or contains pus and blood-clots. The simplest and most efficient apparatus for this purpose consists of 2 or 3 feet of soft rubber tubing to one end of which a small funnel of glass is attached, while into the other extremity a piece of glass tubing is inserted which fits into the lumen of the catheter.

After the passage of the catheter and the withdrawal of the bladder contents through the apparatus as the patient lies in the recumbent posture on his back, the funnel is raised and the injecting material—warm saturated Boric Acid solution or Permanganate of Potash (3 grs. to 1 pint)—is poured into it, and flows into the bladder, which should never be distended beyond moderate dimensions. By depressing the funnel the solution as readily flows out as it flowed in, and the operation should be repeated till the washings show no traces of turbidity or odour. Two, three or more pints may be required for this purpose when the urine is very foul. Many other solutions have been recommended, and the following amount of each drug may be added to 40 oz. water to form a liquid for bladder irrigation: Carbolic Acid, 3 drs.; Nitrate of Silver, 10 grs.; Sulphate of Copper, 30 grs.; Chloride of Zinc, 1 dr.; Perchloride of Mercury, 2 grs.; Resorcin, 4 drs.; Creolin, 4 drs.; Protargol, 2 drs.; Argylol, 4 drs.; Argentamin, 5-10 mins.; Antipyrine, 2 drs.; Lysol, 4 drs.

After the bladder has been thoroughly washed out with boric acid or weak permanganate solution, any of the above liquids may be injected in double or treble strength, and the injection permitted to remain for a few minutes. 2-4 oz. of a 2 per cent. solution of Nitrate of Silver may be safely used in this way, or a small quantity (30 mins.) of a stronger solution (5 per cent.) may be instilled drop by drop into the neck of the bladder by Guyon's method; 2 oz. of solution of argylol of the latter strength may be left in the bladder.

Of urinary antiseptics for administration by the mouth Boric Acid is very efficacious in daily doses of 20 grs., but this amount is very liable to produce gastric irritation and skin eruptions if continued for any length of time, and always upsets digestion seriously *when the kidneys are diseased*. Urotropin in similar dosage (6 grs. ter die) is equally efficacious and less liable to produce irritation even when given more freely. Salol, Benzoate

of Soda, Betol, Aspirin, Alpol, Helmitol and many other drugs of the same class act as urinary antiseptics after their elimination by the renal organs. Creosote when given in 2-5 min. doses in capsular form is a far more reliable urinary antiseptic than is generally appreciated. Any of these drugs or each of them in turn in short courses should be administered when the habitual use of the catheter is necessary, since no patient can be trusted always to have the instrument in a thoroughly aseptic condition; by their judicious administration the washing out of the bladder may frequently be dispensed with. Many vegetable drugs formerly prescribed as bladder sedatives, such as Pareira, Buchu, Uva Ursi, Triticum Repens, Zea Mays, Copaiba, Cubebs, Alchemilla Arvensis, &c., are steadily falling into disuse; those of them that possess any marked action owe their virtues to some antiseptic principle as the arbutin contained in uva ursi, or the volatile oil in buchu. Hyoscyamus and Belladonna exercise a sedative influence over the bladder, and either drug may be combined with antiseptics advantageously; but in full doses they are sometimes liable to precipitate an attack of retention of urine. Oil of Sandal Wood is perhaps the most reliable of the entire group; it has both antiseptic and local sedative action, and when combined with Saw Palmetto, as in the proprietary compound known as Sanmetto, most decided benefit is obtained in the treatment of chronic cystitis and especially of the type accompanying enlarged prostate.

Alkalies (the Liquor Potassæ and Bicarbonate) are often valuable, and still are favourite agents when combined with Hyoscyamus, but the strongly alkaline reaction of urine is a barrier to their prolonged use. Chloride of Ammonium in full, and Cantharides in minute doses, are occasionally beneficial, and the Acid Phosphate of Sodium in 30-gr. doses is most valuable where there is much deposition of lime salts. For the relief of urgent pain and tenesmus Opium is often indicated, and Brunton has pointed out that the best way in which to obtain all the benefits of morphia or opium without any of their drawbacks is to inject into the rectum, with a glycerin syringe, the proper dose of laudanum diluted with 30 mins. of water. In severe and intractable cases it may be necessary to open and drain the diseased bladder from a small median incision in the perineum, or by continuous irrigation after suprapubic cystotomy. The diet of the patient suffering from Chronic Cystitis should be carefully regulated to his requirements. As a rule animal food should be sparingly used, and it is a common mistake to prohibit the free use of diluents on account of the frequent call to micturate; this is often accentuated by a concentrated state of the urine, which is removed by copious draughts of barley water or other mucilaginous drink. Alcoholic stimulants should be avoided. Often benefit is obtained by a sojourn at a warm spa like Vichy, Contrexéville, Ems, Marienbad, or Bad Wildungen.

Exposure to cold and damp should be avoided ; the clothing should be warm and the feet protected by woollen stockings and thick-soled boots, rubber over-boots being worn during wet weather and in frost. Bodily fatigue, especially such as is induced by long carriage or omnibus drives, is injurious.

BLADDER, Irritability of.

This may usually be regarded as the first symptom of a cystitis, and treated accordingly by the removal of the cause and the use of the agents and drugs discussed in the previous article. It must be remembered also that such reflex causes as displacements of the uterus, phymosis, adherent prepuce, threadworms, rectal fissures, ulcer, polypi, and hæmorrhoids may be producing frequency of micturition. The removal of these will be soon followed by a disappearance of the irritable condition of the bladder. Sexual excess probably by inducing prostatic hyperæsthesia is a not uncommon cause and the symptoms rapidly subside as soon as abstinence is insisted upon. An irritating state of the urine may produce considerable frequency in micturition, as the writer has very often observed in cases of even mild glycosuria, and in the absence of bladder disease the secretion should always be examined for sugar. A gouty urethritis is also often to be met with which yields to constitutional treatment. Where the irritability is part of a neurosis, as is commonly the case in patients who suffer from severe insomnia, the treatment of the underlying condition is clearly indicated. In rare intractable cases where the irritability remains even after the removal of the primary exciting cause and the continual tenesmus is wearing down the patient, it may be necessary to open the bladder from the perineum by a small incision in the middle line and establish temporary drainage.

BLEPHARITIS, OR TINEA TARSI.

This is due to an eczema of the margins of the eyelid, and may be caused in mild cases by errors of refraction, which tend to produce a chronic hyperæmia of their conjunctival covering. In severe cases the disease may be part of a strumous or phlyctenular ophthalmia, both of which conditions will require treatment before the blepharitis can be removed.

The form known as squamous blepharitis yields after a time to an ointment of Boric Acid (1 in 20), or Yellow Oxide of Mercury (1 in 100), applied after the branny scales have been washed away every morning and evening by the thorough use of a warm solution of Bicarbonate of Soda (15 grs. to 1 oz.). The margin of the lid should be carefully dried before applying the ointment, or the scales may be removed by swabbing the margins with lint or wool soaked in Olive Oil before the ointment is applied.

In ulcerous blepharitis the treatment is more radical ; the crusts having been removed as in the squamous variety, though

without the use of friction, the minute ulcers coming into view are each to be cauterised by a pointed stick of Mitigated Nitrate of Silver, and any pustules pricked with a cataract knife and all loose eyelashes epilated. Where the ulcerated surface is extensive it may be brushed over with a solution of the Nitrate of Silver (10-15 grs. to 1 oz.). After thorough washing and drying by pressure, Swanzy recommends the following ointment rubbed in with the finger, Hyd. Precip. Alb., gr. xij. ; Zinci Ox., gr. xvj. ; Liq. Plumbi subacet., min. xij. ; and Adeps. Benz., ad ʒj. ; and in mild cases Boracic Acid ointment (1 in 10). Diluted Citrine Ointment meets most requirements, but these applications are useless unless the crusts and loose eyelashes are scrupulously removed by the previous use of alkaline lotions, or soaking of the lids with oil. Lachrymal obstruction, resulting from the inflammatory action, is often present in severe chronic cases, and ectropion may follow these with such complications as trichiasis, and tylosis must be remedied by appropriate surgical treatment. The general health must be attended to, and as the disease is often associated with anæmia, chlorosis, and struma, constitutional treatment with Iron, Cod-Liver Oil, and removal to a bracing seaside resort are often essential.

BLEPHAROSPASM.

This tonic contraction of the orbicularis muscle when not due to a general hysterical condition is always the result of some reflex irritation, originating in a twig of the ophthalmic division of the fifth nerve exposed in the cornea or conjunctiva, or of the upper or lower maxillary nerves distributed to the nose and teeth. The primary source of irritation in the eye, nose, or teeth must in all cases be patiently sought for and removed. When the habit has been long acquired the cramp may, however, remain after the removal of the exciting cause, and in such cases, and where the source of irritation cannot be reached, nerve stretching or excision of the involved branches may be necessary. Pressure over the supraorbital nerve at its notch, or over the infraorbital, temporal, or alveolar branch, may dispel the spasm for a time. In hysterical cases the obvious treatment will be that suitable to the underlying neurosis.

BOILS.

Since these localised inflammations are always due to the introduction of *Staphylococcus pyogenes aureus* to a hair follicle or sebaceous gland, the *preventive* and *curative* treatment of furunculosis by Wright's Vaccine method may be relied upon. He states that 100,000,000 of staphylococci administered to a patient developing an isolated furuncle always produce an immediate positive phase and arrest its development, whilst 300,000,000 injected three or four days later reinforce the action of the previous dose, and put an end to the furuncle. Hence

the treatment of recurring furunculosis is practically identical with that of acne, and the older methods of administering Sulphide of Calcium, Arsenic, Yeast, Nucleinic Acid, Quinine, Iron, etc., are abandoned in all chronic cases. Constitutional treatment, however, is not devoid of value, especially when boils continue to form in subjects suffering from diabetes, chronic Bright's disease, gout, or other serious organic conditions, which lower the resistance to the cocci. J. and R. Reynolds have reported excellent results from the administration of full doses of Dilute Sulphuric Acid every four hours in all cases not complicated by glycosuria.

As soon as an isolated boil shows itself an attempt may be made to cause its abortion by the use of local antiseptics. The skin over the summit of the inflamed cone should be scraped gently till a minute trace of blood exudes, or the hair may be plucked out of the congested follicle, and strong Carbolic Acid, Nitrate of Mercury solution, or Iodised Phenol upon the point of a sharpened end of a piece of matchwood, or a fine caustic point, should be thrust into the centre of the small circumscribed swelling. Some surgeons inject a few drops of Carbolic Acid or Tincture of Iodine by a hypodermic syringe. After this has been done the part may be brushed over with Collodion, Nitrate of Silver solution, Ichthyol and Glycerin (1 in 2), or Thiol, or covered with a piece of lint soaked in a solution of Chloral Hydrate in glycerin and water (1 in 4), or with a compress soaked in saturated solution of Boric Acid. When much pain is felt the Green Extract of Belladonna, rubbed up with an equal amount of glycerin, may be smeared over it.

Sometimes the application of a piece of warmed Belladonna, Opium, Salicylic, or Mercurial Plaster, with a small circular aperture in the middle laid over the developing furuncle, causes its abortion, but when the surrounding skin is already infected new furuncles may appear under the plaster.

Schüle anæsthetises the boil with 3 per cent. Novocain till a wheal forms, then injects 1 c.cm. of the solution slowly into the centre, and destroys it thoroughly by the point of the Paquelin cautery.

Where pus has already appeared a little strong Carbolic Acid may be brushed over the part to destroy the sensibility of the skin, or Cocaine or freezing may be resorted to, and the boil incised with a sharp abscess-knife. For large boils, and for carbuncles which are of the same nature as furuncles, sometimes the cavity or core is swabbed with strong Carbolic Acid, but upon the whole it is better after incision to wash the cavity with Hydrogen Peroxide, and to apply a poultice to assist nature in the separation of the slough or central core. The old linseed cataplasm can only be kept sterile with great difficulty, and since asepsis is essential the best poultice consists of several layers of lint soaked in a warm saturated solution of Boric Acid and

renewed frequently. This or any other liquid application should not be covered in with oiled silk ; the retained secretion and sweat are liable to bring out further crops of boils around the skin beyond the margins of the lint. Where an evaporating lotion is indicated Rectified Spirit (1 in 3) may be applied. Salwedel's method is a compromise between poulticing and applying evaporating lotions ; he lays over the part layers of lint or wool saturated with alcohol, and covers these in with oiled silk perforated by small openings.

Boric Acid Ointment is a good routine application as soon as the contents have been evacuated, and antiseptic ointments, as a rule, are better than aqueous solutions. Basilicon Ointment is a valuable application when the healing is slow. A smart saline purge is always beneficial when the suppurative process is in the acute stage, and the tension of the parts causes throbbing and constitutional discomfort, or fever.

During the healing process, Quinine and Iron, Yeast or Sulphides, and appropriate strengthening diet as strong soups, &c., may be administered, and onions may be freely partaken of. The closest attention should be given to the cleansing of the skin by antiseptic baths, especially in the recurring form of the disease, even when vaccine treatment is resorted to.

In the troublesome furunculosis affecting the external auditory canal, the writer finds that the best routine treatment consists in the instillation of the official Liq. Hydrarg. Perchlor., and the loose plugging of the meatus with wool saturated by the same liquid. Grosch uses solution of Acetate of Alumina (1 in 4). Where the boils are already discharging into the meatus, Boric Acid powder may be insufflated.

The treatment of Carbuncle will be described under its own heading.

BONE, Diseases of—see Caries, Periostitis, etc.

BRADYCARDIA.

The marked slowness of the heart, to which this title is restricted, is but a sign of various pathological conditions, some of which are situated within, whilst others are outside the organ.

The treatment of those cases of bradycardia which are due to the influence of a toxin like that produced in diphtheria, influenza, typhoid fever, gout, jaundice, diabetes, and uræmia, should be eliminatory in principle. The first point of primary importance is to insure rest in the horizontal position as the paralysis of the accelerating or the stimulation of the inhibitory mechanism may be sufficient to stop the ventricular contractions during movement or exertion of the body. The poisons are certain to be eliminated by the skin, kidneys, and bowel if the patient can be kept alive for a sufficient time by the administration of highly nutritious liquid food, and if Strychnine be employed hypodermically. Hot-air baths administered in the horizontal

position, diuretics and mild saline purgatives, followed by general massage, will hasten the elimination of the toxic substances. The strychnine is believed to act as an antidote to the organic poison as well as a tonic to the cardiac muscular fibres, and it is often advisable to combine it with very small doses of *Strophanthus* given by the mouth. 5 mins. liquor strychnine should be given twice a day by the skin, and $2\frac{1}{2}$ mins. tincture of *strophanthus* every four or six hours by the mouth. Atropine is also a drug of considerable value when used judiciously; $\frac{1}{200} - \frac{1}{100}$ gr. may be injected with each dose of the strychnine, or given with the *strophanthus*.

The treatment of bradycardia, produced by muscarine (poisonous fungi), lead, alcohol, tobacco and digitalis, is to be conducted upon the same lines. In gouty cases, *Colchicum* is clearly indicated in moderate doses, combined with the free use of Citrate or Bicarbonate of Potash.

When with the slowness of the pulse there is associated a high degree of tension in the vessels, Nitroglycerin is clearly indicated, but this type of bradycardia is usually due to intrinsic cardiac disease of the degenerative type, as in—

PAROXYSMAL BRADYCARDIA, OR STOKES-ADAMS SYNDROME.—This form of bradycardia may be regarded for all practical purposes as identical with "Heart Block." It is most frequently met with during the senile stage of life, and is usually associated with degenerative changes in the auriculo-ventricular bundle of His which prevent the transmission of the stimulus (originating in the auricles) to the ventricular walls. The slowness of the pulse-rate, which may fall to twenty or less per minute, is not influenced by atropine. The only available treatment lies in rest and the hypodermic use of Strychnine, with the administration of large doses of Iodides for long periods.

The treatment of bradycardia, caused by increased cranial pressure, and of the form associated with chronic valvular disease and arterio-sclerosis, will consist in the use of remedies suited to the primary disease.

BREAST, Abscess of, and Inflammation of—see Mammary Gland.

BREAST, Cancer of—see under Cancer.

BRIGHT'S DISEASE, Acute.

The first indication is to give as much rest as possible to the acutely affected renal organs, any attempt to stimulate the kidney in this condition being liable to increase the congestion and to cause suppression of urine.

The patient should be ordered to take to his bed as soon as the physician is satisfied about the nature of his attack; he should be enveloped in a light flannel sleeping-suit, and have a blanket placed above and beneath him, linen and cotton shirts being objectionable where the functions of the skin require to be encouraged.

His food should consist entirely of milk, administered frequently in small quantities, and the total daily amount need not exceed 2 pints at first. The thirst which is often present may be assuaged by diluting the milk with barley water, or effervescing soda, or potash water. *Potus Imperialis* may be freely administered between the doses of milk, as there is little danger of the ingestion of fluids embarrassing the kidney unless extensive anasarca be present. By these means the high specific gravity of the urine is decreased, and the renal organs are relieved; even with a considerable amount of dropsy it is a mistake to prohibit liquids, as the free use of water tends towards the flushing of the renal tract, and the elimination of effete products, or the removal of epithelial detritus, and the recommendation to prohibit Chlorides is equally unnecessary. Buttermilk, two days or more old, alone or mixed with potash water, affords a most grateful means of dealing with the acute stage of the attack. Animal foods, soups, broths, and eggs, as well as alcohol, in every form should be strictly prohibited, but after a few days farinaceous food may be permitted. In the presence of symptoms of acute uræmia, the milk may for 24 or 48 hours be replaced by plain effervescing soda water given in fair amount.

The physician recognising that the excretory function of the renal cells is in abeyance, should aim at the elimination of the retained toxic products in the blood by stimulation of the functions of the skin and bowel.

Ordinary diaphoretic drugs are much less reliable than the hot pack or hot-air bath. These may be employed as the patient lies in bed in the horizontal position. The hot-air bath, consisting of a large copper spirit-lamp, enclosed with wire gauze as in the Davy lamp, and protected by a wooden cradle to support the bed-clothing, should be placed between the patient's knees. The spirit being ignited, the blankets should be lightly tucked in, only the face being left uncovered, and soon a high temperature of the confined air is obtained (130° F. answers all purposes). The apparatus in constant use in all hospitals is safer; this is usually made of tin. The spirit-lamp has attached to it a long bent chimney or wide telescope-tube, which permits the spirit being ignited on the floor of the sick-room; the heated air passes through the tube, which is introduced beneath the bed-clothes; all danger of fire from the upsetting of the lamp in the bed is thus avoided. The ordinary hot-water bath (105° F.) may be resorted to in the absence of these appliances, but the danger of syncope induced by the removal of the patient to bed and the risk of chills are serious drawbacks to its use.

In ordinary cases the patient may be permitted to remain in the hot-air bath for about 30 to 40 minutes, by which time usually copious perspiration will be induced, and he may have abundant warm, diluent drinks to encourage the sweating. Any symptoms of cardiac depression must be instantly met by the withdrawal

of the lamp, and by sprinkling the face and hands with cold water. The bath may be repeated daily, and the temperature increased, as well as the duration of the bath lengthened according to the effects produced.

After the bath the skin should be dried with warm towels and the following diaphoretic mixture administered with the view of keeping up the action of the skin :

R. *Liq. Ammon. Acet.* $\bar{3}$ ij.
 Spt. Ætheris Nit. $\bar{3}$ vj.
 Aquæ Camphoræ ad $\bar{3}$ viiij. *Misce.*

Ft. mist. cujus capiat cochleare magnum omni hora.

If feverishness be present and no cardiac contra-indication obvious, 2 mins. Tincture of Aconite may be added to each dose with advantage.

In the presence of threatening uræmic symptoms, or when convulsions have already appeared, the hot-air bath should not be relied upon, but resort should be made to the more rapidly acting hot pack. A large tub or bath, half filled with almost boiling water, being carried into the sick-room, a few ounces of Mustard previously blended with cold water are mixed with the contents, after which a large double thick blanket is thrown in, and in a few minutes wrung out by two nurses to get rid of superfluous moisture. In this the patient is completely enveloped, all but his head ; there is little danger of scalding, since the heat is rapidly reduced by the evaporation from the large surface of flannel, and the blanket may be with safety as hot as the hands of the attendants can tolerate in the wringing process. Enveloped in this manner, the patient is placed upon a mattress or palliasse of straw, and covered over with blankets, sheets, or counterpanes, where he may be permitted to remain for one hour, or even more, till a free amount of perspiration has occurred, during which period copious draughts of water may be administered.

In the houses of the poor, where suitable appliances are not readily obtainable, Sir Jas. Simpson's poor man's bath is a useful expedient. It may be made by filling a large number of soda-water bottles with very hot water, over each of which a woollen stocking, squeezed out of hot water, is drawn ; these are placed alongside the patient's body and limbs under the bed-clothing.

Pilocarpine is the most powerful known diaphoretic, and its hypodermic administration is clearly indicated in the uræmic condition, but its injudicious use has so frequently caused serious pulmonary œdema and even death that many physicians have condemned its employment. Some years ago the writer drew attention to the fact that if the drug be administered to a patient *whilst in the hot pack, after the action of the skin has been started,*

there is practically no danger of serious bronchorrhœa supervening; $\frac{1}{4}$ gr. may be given under these conditions with safety. Should symptoms of cardiac depression show themselves a hypodermic of Strychnine will be indicated.

After the hot pack the patient should be transferred to another bed with warm flannel blankets, his surface having been rubbed dry with hot towels. The immediate and urgent symptoms having been thus relieved by the powerful stimulation of the skin, Saline Purgatives if not already administered should be given, and they should be resorted to as a routine in every case of acute Bright's disease with the view of causing the elimination of retained products by the bowel. Sulphate of Soda or Magnesia in $\frac{1}{2}$ -oz. doses dissolved in half a tumblerful of aerated water may be given twice daily, or smaller amounts more frequently to keep up copious watery evacuations. Cream of Tartar alone or with compound powder of Jalap is preferable where much anasarca exists. Elaterin is a powerful hydragogue, but owing probably to the altered condition of the intestinal tract in uræmic conditions it is uncertain in its action, and as a rule Calomel or Blue Pill should not be given in the acute stage of renal diseases. In most cases the following mixture may be relied upon; the method of treating anasarca by concentrated solution of mag. sulph. will be described under chronic Bright's disease.

R. *Magnesii Sulphatis* \bar{z} ij.
 Magnesii Carb. Pond. \bar{z} ijj.
 Aquæ Menthæ Pip. ad \bar{z} xij. *Misce.*

Ft. mist. Signa.—"A large wineglassful every 3 hours till purging occurs, then half a wineglassful every 4 hours to keep up the discharge of watery motions."

Should uræmic convulsions continue in spite of the above treatment, the question of Blood-letting must be considered, and the physician should not hesitate to open a vein at the elbow or incise the dorsal vein of the foot and remove 10-15 oz. blood or even more. At the same time he should immediately inject at least twice as much warm Saline Solution hypodermically into the loose cellular tissue of the body at several spots without pausing to consider whether the formidable symptoms are due simply to retained urea or to the presence of some toxin in the blood. The serum by diluting the remaining blood in the body prevents its concentrated action on the nerve centres, and may save life which would otherwise be sacrificed even when venesection has been employed. Tiessier recommends the injection of the serum of the blood obtained from the renal vein of the goat as being rich in the internal secretion of the kidney.

In extremely urgent cases of renal suppression the method

of relieving the renal congestion by cutting down upon the kidney and incising its capsule has been recommended and carried out. It is, however, doubtful if this procedure or wet-cupping of the loins possesses any advantages over venesection, and the washing of the blood is quite as effectually accomplished by the hypodermic injection of the saline as by direct transfusion. In less urgent cases dry-cupping over the kidneys may be resorted to, especially when there is much blood in the urine.

When the pulse is high and bounding Nitroglycerin may be safely administered, and Oxygen is indicated when asphyxial symptoms are prominent.

After the disappearance of all uræmic symptoms the question of administering diuretics will crop up when the secretion of urine is scanty and there is much anasarca remaining. As a rule it is safer practice to trust to saline purgation, but such mild hydragogue diuretics as Sweet Spirit of Nitre and the Citrate or Acetate of Potash may be tried. Digitalis in the later stage and Caffeine are valuable, but should never be employed when the arterial tension is high. The combination of Nitroglycerin with $7\frac{1}{2}$ min. doses of tincture of digitalis is a good one in these cases, especially when mild counter-irritation is at the same time applied in the form of a linseed and mustard poultice over the loins. Stimulating diuretics like squill, broom and gin should be avoided, and cantharides must never be used as a vesicant or counter-irritant.

Symptoms are to be treated as they arise ; the most formidable of these is severe headache which, however, is usually promptly relieved by a purgative, and when persistent, small doses of Antipyrine or Sodium Salicylate may be given. Opium in every form is most undesirable. Obstinate vomiting is best relieved by small quantities of sour buttermilk, which neutralise the irritating action of the poison on the stomach ; when of cerebral origin, its treatment must be on eliminatory lines.

As the amount of blood and albumin in the urine gets less the diet should be cautiously augmented, the milk being supplemented by carbohydrates in increasing amounts and vegetable soups, and at a later stage fish with egg yolk. Anæmia is always present at this stage, and the best ferruginous preparation for routine use is the extemporised preparation of the Acetate of Iron prescribed as Basham's mixture containing 10-15 mins. tincture of perchloride of iron with 1 dr. of liquor ammoniæ acetatis in water.

After the elapse of several weeks should anasarca and albuminuria remain the subsequent treatment of the case and its complications becomes identical with that of chronic Bright's disease, but the routine use of the hot-air bath and saline purgatives may be safely continued daily for a period of two or three weeks as long as the patient's strength keeps up. At the end of this time the bath may be given every second or third day for

three more weeks, the purgative being administered during the intervening days. A change to a warm equable climate is most desirable in cases which show a tendency to pass into the chronic form of the disease. During convalescence and for long afterwards it is needless to say that the most scrupulous avoidance of chills and exposure of every kind is to be guarded against by warm clothing and by keeping indoors after sunset in all climates.

BRIGHT'S DISEASE, Chronic.

The principles which regulate the treatment of the affections usually grouped under the above title in the main are those laid down for the management of acute nephritis—viz., to insure as much rest as possible for the diseased organ, and to encourage the eliminatory action of the skin and bowel.

The treatment of the form known as *Chronic Parenchymatous* or *Tubular Nephritis*, which is pathologically identified by the presence of the large white kidney, will be first described.

The dietary is of vital importance, and as in the acute disease which often lays the foundation of this chronic form, milk takes a prominent place, but the mistake is too frequently made of keeping the patient upon an exclusively milk diet for an indefinite period to the deterioration of his general physical condition, especially when the drain of albumin is continuously high. It is, however, a good routine to place the patient, when first seen, upon an exclusive milk regimen for such a time as will enable the physician to satisfy himself thoroughly whether the case he is dealing with is a mild acute affection or an essentially chronic affection. 3 or 4 pints of milk daily must be considered as a minimum amount to maintain the nutrition of the body, especially when the patient is not strictly confined to bed. Should digestive disturbances be present peptonisation of the fluid will be necessary, or a fairly acid buttermilk may be substituted, or, better still, Koumiss may be given. It is a safe practice to continue this dietary as long as any uræmic symptoms are present, or, in the absence of such, as long as the patient's tissues continue to improve in physical tone and good condition. Usually after some weeks it becomes necessary to supplement the liquid dietary by farinaceous foods, the best of which is porridge, well boiled with milk; gruel, rice, bread and butter, weak tea with plenty of cream; vegetable soups, white fish, and, at a later stage, weak mutton broth or boiled mutton may be permitted in small quantity. There is a consensus of opinion that meat extracts and strong animal soups as well as alcohol in every form should be prohibited. There is a doubt about the advisability of adding eggs to the diet, owing to their richness in albumin, especially when the urine is highly loaded with this substance, but the yolks of lightly- or hard-boiled eggs may be freely permitted when the patient relishes this article of diet, and they may be advantageously taken as a dressing or accompaniment of fresh lettuce.

Peas, potatoes, and fresh fruits and vegetables should enter into the dietary in all cases, but asparagus, owing to the diuretic action of its contained Althein, should be regarded as a medicine to be used tentatively.

Much has recently been written about the value of a "salt-free" dietary in chronic nephritis; the subject is only of importance where anasarca is a prominent feature. The mistake is made of trusting to such a dietary for the elimination of the retained metabolic products over whose production it has practically no influence. The excretory power of the kidney over chloride of sodium in patients suffering from chronic tubal nephritis is often much diminished, hence the salt remaining in the tissues retains water there and increases the dropsy. This is seen in some cases of great œdema where the use of a salt-free diet is sometimes followed by a large increase in the amount of urine passed, and a corresponding diminution in the dropsy.

An absolutely salt-free diet is, of course, impossible, but by avoiding the use of the chloride in cooking and at the table, the daily intake can be reduced to 20 or 30 grs. by using cream instead of milk with rice, arrowroot, and porridge, and tea, and avoiding the use of salt in the making of butter, biscuits and bread. Chicken, fresh-water fish boiled, potatoes, fresh fruit and cream cheese constitute the staple dietary which should contain only a moderate amount of liquid. Such a dietary, as in the case of an exclusive milk regimen, should only be persisted in for a few weeks at a time; it is clearly indicated in œdema of the lung.

Clothing is an important element in the treatment, especially when the condition of the patient permits of his moving about in the open air; he should be clad in flannels, and his footwear must be impervious to cold and damp. When complications exist which compel him to remain in bed, he should lie between blankets, and have a freely ventilated room warmed by the fire of an open grate. In the case of children, unless in warm sunny weather, they should be kept in bed, and in winter confinement to a warm room is usually necessary.

Climatic treatment of the disease is not to be lost sight of when the patient's means enable him to obtain the benefits of a warm, dry atmosphere as that of the Nile or Algiers. In the selection of a climate the most important consideration is to avoid those where the variations of daily temperature are sudden and extreme. Madeira or the Canary Isles afford an equable moist climate for winter resort, especially suitable for patients liable to exacerbations of acute attacks who bear cold badly.

As in the acute disease the action of the skin is to be sedulously maintained in a high state of efficiency. In the absence of anasarca or uræmic symptoms the patient is usually able to move about, and beyond the extra precautions as regards clothing, active diaphoretics can only be employed occasionally. A hot-air or Turkish bath, or in the absence of these a hot-water bath,

should be taken every third or fourth night, after which the patient should immediately retire to bed between blankets to prolong the action of these diaphoretic measures.

In the absence of anasarca the indication for active treatment by diaphoretics is the diminution in the output of the nitrogenous elements in the urine, due allowance being made for the lowered amount of proteids in the altered dietary. When the bulk of urine is small and the S. G. markedly diminished, even in the absence of symptoms the patient should be ordered to bed and a daily course of hot-air baths prescribed in conjunction with diaphoretic drugs like Mindererus Spirit and Sweet Nitre as in the treatment of the acute variety of the disease. Pilocarpine by the mouth is recommended, but the use of this drug should be confined to the treatment of the acute uræmic condition; the Tincture of Jaborandi is, however, often of use when there is much blood in the urine, and this is also true of Indian Hemp.

Diuretics are to be employed with circumspection, though less likely to prove mischievous than in acute attacks. Digitalis in moderate doses, when the tension is not high, is usually quite safe, and as a rule it can be advantageously combined with iron, as some degree of anæmia is always present. The mixture of the tincture of digitalis (5-10 mins.) with an equal quantity of tincture of iron in each dose, to which 5 mins. dilute phosphoric acid are added, may be taken thrice daily after food for considerable periods. Copaiba, gin, squill, and other irritating diuretics should never be employed, and though some authorities speak highly of Cantharides in small doses this agent must be tried with extreme caution.

Diuretin, Thephorin, Theocine, Agurin, and other Theobromine salts are safe and may be tried when the renal secretion is scanty and there is much dropsy, and Caffeine is a good routine drug also: all these strengthen the heart and are indicated when there are any signs of cardiac weakness, but as diuretics they are useless in the late stages of the disease.

Nitroglycerin often acts as a powerful diuretic when the tension is high and the urine scanty; half of a B.P. tablet may be given every hour for 4 or 6 times; if no increase in the secretion is observable at the expiration of eight hours its use may be abandoned.

Purgatives are always indicated unless when obstinate diarrhœa is present, and as in the acute disease salines should always be selected. The most manageable of these is the Sulphate of Magnesia, which may be administered every second morning before breakfast as a routine in most cases. Many patients prefer the natural mineral purgative waters, the best of which is Rubinat. In advanced stages of the disease with threatening uræmia and scanty renal secretion, the patient must be ordered to bed and salines administered till a free drain upon the bowel is established, which must be daily kept up by the use of Cream of Tartar or small doses of Mag. Sulph.

Many drugs are vaunted as possessing a specific effect upon the amount of albumin in the urine ; no such action can, however, be attributed to any known substance. An absolute milk diet undoubtedly tends to diminish the quantity of albumin, but this effect soon passes off, the albuminuria remaining at a standstill ; when this occurs the diet should be altered, and carbohydrates with fish administered. There is a growing conviction that too much importance has been attached to the amount of albumin present, and that no attempt should be made to treat the disease symptomatically from the standpoint of its being simply an albuminuria. When the albumin has been supposed to diminish after the use of a drug it will generally be found to be but an apparent reduction owing to the diuretic action of the remedy administered, since the urine becomes increased and the albuminous fluid diluted ; hence the effect of a strictly milk diet on the quantity is always more apparent than real. In the amyloid form of renal disease great quantities of albumin may be voided daily for years without making a grave impression upon the general health. Vegetable and mineral astringents are not only useless but harmful, and as a rule strontium and calcium salts possess no influence over the daily excretion of this substance. When, however, much blood appears in the urine great good can often be obtained by saturating the system with Chloride or Lactate of Calcium ; these materially lessen the albuminuria which has been augmented by the outpour of pure blood. In this way also Jaborandi and Indian Hemp may prove useful.

As a routine treatment by drugs, if such must be prescribed in chronic tubal nephritis, the least objectionable and the most generally useful will be the combination of Digitalis with Iron Acetate already mentioned, along with the morning purgative dose of a saline hydragogue.

Decapsulation of the kidneys has been strongly recommended and carried out successfully in several cases with the view of causing new vascular development between the vessels supplying the renal structure and those supplied to the neighbouring tissues. In all cases a new vascular capsule forms, and the amount of urea eliminated increases markedly, and in many instances a permanent cure has followed. The operative treatment of this generally fatal disease is therefore becoming more hopeful, but the writer regrets that he has no personal experience of decapsulation.

During the late stages of the disease *anasarca* may threaten life, and must be relieved by more active medication. As by this time the inadequacy of the kidney has become established, no reliance can be placed in diuretics, and calomel is especially dangerous ; saline cathartics must be pushed to the farthest extent compatible with the patient's weakened condition. In the general water-logged condition Hay's method of using these agents may be resorted to ; he gives 2 oz. Mag. Sulph. dissolved

in 2 oz. water after the alimentary canal has been emptied by a 12 to 18 hours' fast. Sometimes many pints of fluid may be evacuated by this plan of purgation, and it may be the only available method of prolonging life in the œdema which attacks the pulmonary organs, or of saving life in the sudden œdema of the lung, which occasionally supervenes in the acute form of Bright's disease. A salt-free diet should have a free trial in all cases.

Accumulations of fluid in the pleuræ, pericardium or peritoneal cavity seldom are so great as to cause danger, but should this occur aspiration must be employed. As a *dernier ressort* the subcutaneous tissue of the lower extremities may be punctured after thorough sterilisation of the skin has been effected, and its surface has been smeared over with a mild antiseptic lanolin ointment. A number of punctures should be made with a moderately coarse glover's needle over the calf, malleoli, and dorsum of the foot, after which the limbs are to be loosely enveloped in moist warm flannel bandages. The drainage should be encouraged by elevating the head of the bed so as to determine the dropsical swelling to the seat of the punctures, and in this way many pints of fluid may be evacuated. Sometimes the drainage is effected by leaving a fine Southey's tube *in situ* in the region of each ankle, but the danger of erythematous or erysipelatous eruptions, followed by sloughing, must not be lost sight of whenever the skin is punctured.

Upon the supervention of uræmic convulsions the treatment of uræmia as mentioned in the previous article must be promptly commenced; the hot pack, saline purgatives, and in extreme cases venesection with the injection of large quantities of saline solution should be administered, Pilocarpine only being resorted to when there are no signs of pulmonary œdema, and Nitroglycerin used when the tension is high. Chloral Hydrate with Bromides in full doses may be administered by the bowel, and Oxygen inhalations used when the convulsions fail to respond to the action of these diuretic agents, or Chloroform may be tried.

Obstinate vomiting and diarrhœa are to be treated upon general principles, one of the most effective agents being sour buttermilk in small and frequently repeated doses in both these troublesome complications; under ordinary circumstances the diarrhœa should not be controlled by the use of astringent drugs, and opium should not be employed.

A most common phase of chronic Bright's disease is the acute exacerbations, usually the result of chills or exposure, which manifest themselves by the presence of blood in the urine, and often with increase of anasarca. The treatment in such cases should be identical with the management of a typical attack of the acute disease, the patient being immediately sent to bed and hot-air baths, purgatives and mild diaphoretics administered till the case resumes its usual chronic features.

When pregnancy complicates the chronic affection, symptoms of uræmia are to be closely looked for ; should convulsions occur the uterus must be emptied without delay after chloroform has been administered and venesection followed by saline injections, but the judicious use of saline purgatives may often tide the patient safely over the later months till normal delivery occurs.

Uræmic dyspnœa, when not yielding to purgatives and hot-air baths, may be sometimes relieved by drachm doses of Ether or by inhalations of Amyl.

Sleeplessness should not be met with opiates ; Trional or, better still, Paraldehyde may be safely employed ; or when the degree of insomnia is not serious Bromides should be tried. Headache may be relieved by Antipyrine in combination with Caffeine, and it is worth remembering that the intense headache of the later phases of the disease may be of meningeal origin, and not symptomatic of uræmia as is ordinarily the case.

Hiccough is usually a terminal symptom ; when obviously so and the patient is sinking from the agonising exhaustion which it causes, the question of a full hypodermic dose of Morphia should be carefully considered with the view of assuaging his misery. It should not be withheld under such circumstances after the full situation has been explained to the sufferer and his friends, and their acquiescence has been obtained.

The treatment of the *fatty* kidney form of chronic Bright's disease is identical with that of chronic tubal nephritis.

Amyloid or *Waxy* disease of the kidney is sometimes included amongst the group of chronic Bright's disease. The treatment consists in the removal of the cause of the prolonged suppuration which has induced the lardaceous disease, and when bone necrosis is the source of this, operative interference is demanded even though the urine should contain a considerable degree of albumin. The same remarks apply to suppurating lymphatic glands, joints and all forms of chronic abscesses. The new treatment of long-standing and extensive fistulous tracts by the injection of warmed Bismuth Jelly will diminish the number of cases of amyloid disease of the kidney. As a rule amputation is to be preferred to excision when joint disease is the cause of lardaceous degeneration. When the affection has appeared as a sequela of syphilis the constitutional treatment of the causal disease should be commenced by giving large doses of Iodide of Sodium, mercury being given sparingly and only for short periods at a time. Iron is always indicated, and highly nutritious mixed foods should be administered instead of milk diet, as there is always considerable anæmia, and practically no tendency towards uræmia and anasarca unless when tubal or interstitial nephritis supervenes in long-standing cases. Arsenic is highly recommended by several authorities and Phosphorus by some, but their utility is doubtful, the former drug may be combined with the iron for short periods.

Chronic Interstitial Nephritis or the *Cirrhotic* form of Bright's disease pathologically recognised by the presence of the small red or contracted kidney is to be treated in the main upon the above lines, but with the several modifications to be presently mentioned.

The diet should not be so restricted since the very protracted nature of the disease demands that the nutrition of the body must be met by a mixed and fairly generous dietary, but all excess in eating must be rigorously guarded against. Should the patient be content to live upon a purely vegetarian diet all difficulty will be solved, otherwise he may be permitted to have one moderate meal containing white meat daily, or roast beef, or mutton every third day may be permitted, with farinaceous foods and eggs in fair amount along with fresh vegetables, fruit and potatoes. White fish and chicken should, however, form the staple of his animal food supply; strong soups, game, meat extracts and dishes strong in nuclein must be avoided. Large amounts of fluids are to be prohibited even more strictly than in the tubular affection, and alcohol in every form abstained from or only used in extreme moderation and largely diluted when any complication or symptom warrants its exhibition. Strong tea or coffee is also objectionable, but there is no reason why a very moderate amount of tobacco may not be permitted when the patient has been accustomed to its use; the physician should not encumber his regulations with such close restrictions as are liable to render the patient's life irksome when such are not vitally necessary.

The same strict precautions must, however, be maintained by warm clothing, &c., as regards protection from chills as in the parenchymatous type of the disease. Everything which tends to keep the cutaneous surface in a healthy and active state without inducing continuous perspiration should be encouraged, hence a warm or Turkish bath twice a week at bedtime is desirable, but as a rule cold baths and open sea-bathing should be prohibited, and the writer is convinced that the morning cold bath should be replaced by a tepid one or else abandoned. The tepid morning sponging indulged in by many patients under the advice of the physician is not free from serious objections, and is wholly unnecessary when a warm bath and good wash is employed at night two or three times weekly.

When the patient's means permits of his residence in a warm equable climate like the Canaries, Madeira, or the West Indies, his prospects of recovery are distinctly brightened, and bathing restrictions may be relaxed. The condition of the bowels should be closely attended to, and it is essential that not only should constipation be avoided but a saline purgative should be taken every second or third morning at least, and in the late stages of the disease upon every morning before breakfast.

As the disease is so often found associated with arterio-sclerosis,

without pausing to consider whether this is a question of cause or effect, the influence of such agents as tend to produce degeneration of the vessels must be rigorously avoided as overwork, mental and physical, worry, alcoholism and gluttony. Syphilis, lead-poisoning and gout if present will require appropriate treatment, and the general principles laid down in the article on Arteriosclerosis for the regulation of the patient's life with regard to work, exercise, sleeping hours and recreation should be carried out.

Chronic interstitial nephritis being usually associated with high arterial tension and cardiac hypertrophy, many of its victims succumb to cerebral hæmorrhage. The question of whether active drug treatment should be continuously employed with the view of lowering arterial pressure is not such an easy one as it may appear ; since in the first place it is obviously impossible by drugs to maintain for a period of years a continuous diminution of tension in the vessels, and secondly because there are strong reasons for believing that a permanent reduction of tension below the normal is not free from serious danger. Nevertheless few diseased conditions come under the survey of the physician in which he can have the confidence that by the wise and discriminating selection of remedial agents he is enabled to minimise or turn aside dangers of a threatening character, and prolong life under comparatively comfortable conditions as in the treatment of the affection under present consideration.

The possibility of the rupture of a cerebral vessel is always a real one, and there should be no hesitation about the employment of agents which reduce tension when this becomes suddenly very high with a bounding pulse and throbbing vessels—a condition very liable to supervene upon the already continuous permanently elevated pressure nearly always characteristic of the disease. The cause of the superlative tension should be sought out ; it may be found to be a transgression in dietary which may be remedied by a reduction of food, or it may be the result of mental worry or strain of a temporary character or of insomnia, some inter-current febrile attack, chill or over-exertion which has thrown extra work upon the already inadequate renal organs. The immediate treatment in all such attacks is obvious and imperative ; the tension should be at once reduced by a vaso-dilator given in small and frequently repeated doses and a smart saline purgative administered, absolute rest of the body for the time being insisted upon.

For permanently maintained high tension no drug is of equal value to the Iodide of Sodium or Potassium ; it may be given in daily doses of 15-20 grs. for considerable periods. In the intervals during its suspension Nitroglycerin, in doses of half a B.P. tablet, may be taken six or more times during 24 hours, or the more slowly acting Nitrite of Soda or Tetranitrate of Erythrol may be employed in $\frac{1}{2}$ -gr. doses six times daily.

The high-frequency current has been found of considerable

value in reducing the tension. In the acute attacks of high tension which sometimes suddenly appear without warning or apparent cause, and which are associated with pulmonary embarrassment and cardiac dilatation, a vein should be quickly opened as the only method of warding off a fatal issue. The writer has had a case recently under his care where the use of the lancet was upon several occasions resorted to with happiest results; the patient, a medical man, opened his own vein upon three or four occasions with immediate relief from what was felt to be impending death.

Where the tension in the arteries falls below the normal without the use of vaso-dilators this may be the first sign of failing compensation owing to the hypertrophied organ having lost its tone or become the seat of degeneration. The danger of dilatation of the heart under even moderate exertion in such circumstances must not be lost sight of, and cardiac tonics, as Digitalis, Strophanthus, and Strychnine are clearly indicated as in other forms of failing compensation, till the blood-pressure is elevated to slightly above the normal.

Insomnia is best relieved by large doses of Bromides, combined with a small amount of Chloral Hydrate, Indian Hemp, or Hyoscine; Paraldehyde may be tried, or Trional in 20-gr. doses.

The polyuria of this diseased condition should not be interfered with save by a moderate restriction of the intake of fluid. As there is little tendency to anasarca unless in those comparatively rare cases where an acute attack of tubal nephritis supervenes upon the chronic interstitial affection, agents for the relief of dropsy are seldom clearly indicated, and diuretics should be sparingly used.

The ever-present danger in the later stages of the disease is uræmia, and this may be long warded off by a judiciously arranged dietary, by the continuous use of saline purgatives and by close attention to the functions of the skin. When twitchings of the muscles, headache, cerebral irritation or dyspnœa appear the active treatment of the uræmic condition by the hot pack should be resorted to, and Pilocarpine administered. There should be less hesitation in employing this latter drug than in the type of renal disease where dropsy is a prominent feature, and Nitroglycerin or Amyl Nitrite may be freely used in all uræmic cases where the blood-pressure is high. Upon the first appearance of signs of cerebral hæmorrhage a large vein may be freely opened, especially since it is difficult to gauge how much of the cerebral depression may not be owing to the general toxæmia.

Decapsulation of the kidney, though apparently less hopeful than in the parenchymatous type, has been successfully performed, and there are grounds for expectation that the operation may with future experience become an established procedure especially as the cystoscope affords a reliable means of judging of the adequacy of each kidney by catheterisation of the ureters.

The results of the administration of dry kidney substance or renal extracts up to the present afford little hope that the disease may be made amenable to organotherapy, and the same remark applies to the use of fibrolysin with the view of causing the absorption of pathological fibroid tissue.

BROMIDROSIS.

This term is restricted to localised excessive perspiration accompanied by evil-smelling exhalations. The feet and armpits are chiefly the seat of this affection. The most scrupulous and frequent cleansing with antiseptic solutions must be rigidly enforced, and the general health carefully attended to. Internal remedies are of little use, though Belladonna or Atropine internally has some influence upon the secretion of the sweat, and may be combined with Ergot ; or 10 grs. of Boric Acid along with 30 grs. of Precipitated Sulphur morning and night may be tried.

The best local treatment is powdered Boric Acid rubbed into the skin and dusted freely between the toes, and generously strewn over the inside of the stockings and boots, and repeated twice a day or oftener with change of stockings after thorough washing in two or three waters containing Condy's fluid, Creolin or a small quantity of Chlorinated Lime. Cork inside soles should be worn and changed from time to time, or dipped into saturated Boracic Acid Solution and allowed to dry. Stockings may be treated in the same way with advantage. Old footwear should be discarded and roomy shoes, or boots with cloth tops, are to be worn ; the feet should be kept as cool as possible, and the armpits well ventilated by apertures made in the undershirt. This treatment will, in the great majority of cases, effect a cure if persisted in. Strong Boric Ointment may be used instead by those who have long walks to accomplish.

The following powder, sprinkled inside the stocking soles, after washing the feet and rubbing with Alcohol is recommended by Bardet :

Pulv. Talcis, ʒx. ; Bismuthi Subnit., ʒxi. ; Potassii Permang., ʒiij. ; Sodii Salicyl., ʒss. ; misce.

Sodii Salicyl., 15 grs. ; Bismuth. Subnit., 30 grs. ; Pot. Perman., 80 grs. ; with Creta Prep., 6 drs. is used by Pringle.

Tincture or Liniment of Belladonna is useful when painted over the feet or armpits ; and Hebra used the Diachylon Ointment (melted diachylon plaster, mixed with an equal weight of linseed oil), spread upon strips of linen and applied morning and night. In a few days the thick cuticle exfoliates, leaving a healthy skin below. After this has come away, astringent dusting powders effect a cure in a few weeks.

Hydrg. Perchlor. Solution 1 in 2,500 has been tried, and solution of Salicylate of Soda, Oxalic Acid, Naphthol and Beroglyceride have given good results. A strong spirituous solution of Quinine and a 6 per cent. aqueous solution of Zinc Chloride have given

good results. Unna uses an ointment consisting of equal parts of Zinc Ointment, Turpentine and Ichthyol, and dusts in a powder during the day composed of 15 grs. powdered Mustard and 1 oz. Talc. Kaposi applies a solution of 24 grs. Naphthol, 48 m. Glycerin, and 1 oz. Alcohol, twice a day, and afterwards dusts on 16 grs. Naphthol, mixed with 3 oz. Starch Powder. Formalin painted over the sole of the foot in 5 per cent. solution and a weaker strength (1 per cent.) applied to the dorsum is also efficacious. Resorcin diluted with starch makes a good antiseptic powder.

When ulcers and abrasions occur the dry Boracic Acid will often effect a cure, but the use of a 5 to 10 per cent. Solution of Chromic Acid as a preventive before ulcers break out was adopted in the German Army for tender feet. The writer has seen trouble follow the use of this solution in cases where blisters or ulcers had already formed, and several cases of serious poisoning from the absorption of the acid are reported. A 2 per cent. Ointment of Salicylic Acid is now used in army practice.

Neebe places the soles of the feet and heels in crude Nitric Acid for a few seconds or in Hydrochloric Acid for ten minutes, taking care not to let the acid come in contact with the dorsum of the foot. As soon as pain is excited the immersion is stopped. The skin, especially between the toes, is then carefully washed in soap and warm water. Applications of the hydrochloric acid are repeated twice weekly for five to eight weeks, when a permanent cure may be confidently expected after exfoliation has been completed. A 10 per cent. solution of Nitrate of Silver may be used in the same manner.

BRONCHIECTASIS.

Regardless of the primary cause of the dilatation of the tubes the patient should be treated by out-door living, improved hygienic surroundings, abundant nutritious food, Cod-Liver Oil, and such climatic conditions as are usually indicated in wasting disease caused by chronic disease of the lung. In all cases an atmosphere as free from septic organisms as possible should be selected, hence an Alpine or a bracing seaside resort is desirable.

The primary disease originating the bronchial dilatation as fibroid phthisis, asthma, bronchitis, emphysema, &c., should be dealt with by the remedial agents suitable to each affection.

The main indications for the treatment of bronchiectasis itself are to sterilise as far as possible the contents of the cavities and to facilitate their thorough evacuation.

For the former purpose volatile antiseptics internally are employed; the best of these for routine administration by the mouth is Creosote which may be given in 2-3 min. capsules 3 or 4 times a day or oftener; Guaiacol in double these amounts, Eucalyptus Oil, Eucalyptol, Thymol, Terebene, Myrtol and other agents of the same class are also valuable when creosote is

objected to on account of its unpleasant odour. Garlic is extolled by many authorities ; it is of undoubted value when given freely with the food or in cachets containing $\frac{1}{2}$ dr. each or in 30 min. capsules of the juice of the bulblets. Allyl Oil obtained from the leek may also be given in 1-2 min. capsules. By keeping the blood saturated with these volatile substances the multiplication of the putrefying organisms present in the cavities can be considerably retarded ; their action must, however, be supplemented by the next mentioned class of agents.

Inhalations.—Any of the above mentioned may be employed, the best is Creosote volatilised by heat. Chlorine, Iodine, Menthol, Eucalyptus, Carbolic Acid, Terebene, Thymol, or Oil of Peppermint may be given as an inhalation with hot water, or placed in any of the respirators made for the purpose. It is a good plan to saturate the air of the patient's room with the vapour of Turpentine or of the Oleum Pini Pumilio or Oleum Krummolzol. Most of the above-named antiseptics may be administered also in the form of spray.

The inhalation method of employing creosote for the sterilisation of fetid sputum is that devised by Chaplin. A small evaporating dish is partially filled with the so-called crude creosote obtained by the distillation of coal tar, but ordinary wood creosote is better ; a small chamber is selected with a closely fitting window and door, and as the fluid is heated by a spirit lamp, dense white pungent fumes are given off which excite severe coughing, whereby the cavities soon become thoroughly emptied and their lining membranes disinfected. The eyes and nasal mucosa must be protected from the severe irritation ; half an hour will be sufficient in length for each sitting, but if the chamber be large and the vapour of the creosote thereby diluted, the inhalation may be extended to double this time or longer. After 5 or 6 weeks in many cases the results are most successful, and where the dilatations have not been extensive a complete cure may be expected to follow.

Continuous Oxygen inhalations by Stoker's method have given excellent results, and in a case recently reported by Herringham, the fetor which had persisted after the use of the creosote chamber disappeared almost completely, and the amount of sputum fell from 10 or 12 oz. to 1 oz. daily.

Nascent Chloride of Ammonium formed by sprinkling salt upon strong vitriol, placed in vessels alongside those containing strong ammonia, is a valuable method of treatment, and the patient can be kept living in a room impregnated with the nascent fumes for long periods. The formulæ usually employed for sprays containing creosote, carbolic acid, menthol, &c., are as a rule worthless, the drugs being in such diluted solutions, and moreover the antiseptic spray is liable to never reach the infected cavity at all, and the liquid preparations for sprinkling upon inhalers or for use with boiling water are little better. It is a good plan to have a flannel binder, moistened with Oil of Eucalypt-

tus, placed round the chest and abdomen ; the odour of the oil is given off slowly all day, and is inhaled by the patient constantly.

Intratracheal injections have been used with much advantage. 5 grs. Menthol and 1 min. Guaiacol dissolved in 54 mins. Olive Oil may be injected twice a day into the trachea through the laryngeal opening, care being taken to secure the flow of the oil into the cavity by arranging the patient's posture on the affected side.

This method and the dangerous one of injecting disinfectants through the chest wall are rendered unnecessary by the employment of the creosote chamber.

Where there is one large cavity, especially if near the middle or base of the lung, which cannot be reached by inhalations and which the patient cannot empty by severe coughing, the propriety of making a free opening from the outside, and providing thorough drainage, especially if the physical signs show that it is near the surface of the lung, is established, though on the whole surgery has failed in this disease, owing to the formation of permanent sinuses which are liable to follow.

A point of primary importance in the treatment of all cases is to educate the patient systematically to assume such a position as will upon coughing enable him to empty the cavity by the force of gravity. This he may do lying in bed and almost inverting his body supported by his hands placed on the floor, whilst his head is lowered almost to the level of his hands. The pus sometimes flows out in a stream when this posture is assumed, and many patients have discovered this plan for themselves in some act of stooping as in the tying of their boot-laces. After the evacuation of the cavity contents it is a good plan to administer the internal dose of creosote which will thus exert its full power over the lining of the empty dilatation.

BRONCHITIS, Acute.

In acute catarrh involving the upper portions of the respiratory tract in otherwise healthy subjects there is often little indication for active drug treatment. Where the patient persists in going about and attending to his ordinary duties, the physician should be careful not to prescribe the remedies indicated where the affection is more severe and where the patient is confined to his room. Thus diaphoretic remedies, sprays and inhalations render the patient more susceptible for the time, and should he expose himself immediately afterwards, a mild attack of nasopharyngeal, tracheal or bronchial catarrh may be converted into one of capillary bronchitis. A hot bath at bed-time, followed by a large Mustard poultice and one dose of Morphia, $\frac{1}{4}$ gr., upon lying down, will give relief during the night and sometimes will shorten the attack. For administration during the day, when there is much unnecessary coughing, 3 or 4 mins. of Liquor Morphinæ and 10 of Vin. Ipecac. may be given every few hours. Attempts to abort the attack upon the first appearance of nasal

symptoms by large doses of Quinine, Morphia, Carbolic Acid, &c., or by snuffs and sprays are generally futile, but the vaccine treatment referred to later on is often highly successful.

If the attack, though limited to the larger bronchi, is much more severe and is ushered in by some feverishness and dry, harassing cough, with sense of constriction and rawness in the chest, or where the affection is bronchitis of the middle-sized tubes from the first, the patient must be confined to his bed or to his room, which should be kept at an even temperature a little over 60° F., and the air should be rendered moist by the vapour of hot water. For this purpose the ordinary bronchitis kettle placed upon the fire is best, or a few feet of tin tubing attached to the spout of any kettle will do. The numerous petroleum and spirit-lamp contrivances so much used should be strongly condemned. The unwholesome products of combustion escaping into the confined air of the room aggravate the cough, and add to the bronchial irritation. It is not an unusual event to find the cough cease when they are discontinued. Much benefit has been obtained in the treatment of acute bronchitis and all forms of catarrh of the upper air passages by inhaling a fine spray containing Adrenalin. Zuelzer states that its action in some cases is really marvellous when asthma is present.

Warm drinks should be administered, and there is nothing more grateful than home-made lemonade mixed (just before being swallowed) with kali water, the resulting Citrate of Potash formed by the combination being one of the most valuable of diaphoretics and expectorants. Sweet Spirits of Nitre in drachm doses is a valuable diaphoretic at this stage, or the following mixture may be prescribed :

R. *Pot. Bicarb.* *ʒj.*
 Tr. Aconiti *min. xxx.*
 Aquæ *ʒxij. Misce.*

Capiat cochlearia duo magna cum cochleare uno magno succi limonis quarta quaque hora.

During the early stage the chief indication is to alter the dry, swollen and congested condition of the bronchial surface, and "to cause the tubes to sweat," and there is no remedy equal to small and repeated doses of Tartar Emetic which may be administered after the first 24 hours, combined with Morphia to great advantage thus :

R. *Antim. Tart.* *gr. j.*
 Liquor. Morph. Tart. *ʒiss.*
 Vini Ipecac. *ʒij.*
 Aquæ Camph. *ad ʒvj. Misce.*

Fiat mistura. Sumat cochleare mag. tertia quaque hora.

Linseed and Mustard made into a large warm poultice should be applied to the front of the chest to cause thorough redness, of the skin, and when it becomes so irritating that it can no longer be borne with comfort, it should be replaced by a layer of warm cotton-wool, and another poultice of the same kind applied to the back between the shoulders, after which a warmed extemporised jacket of cotton-wool or Gamgee tissue may be worn. The poulticing may be continued throughout the attack by applying plain Linseed poultices every 2 or 3 hours after the Linseed and Mustard have caused redness should there be much constriction of the chest or dyspnœa.

The same treatment may be carried out in the case of children, only Morphia or Opiates should not be given. Young patients will, however, bear almost as large a dose of Antimony and Ipecac. as an adult. For a child two years old the following may be given in teaspoonful doses every 2 hours :

R. *Vini Antim.* ̄ij.
 Vini Ipecac. ̄ij.
 Aquæ Ammon. Acet. ̄iv.
 Syr. Tolu. ̄iv.
 Aquæ ad ̄ii. *Misce.*

A hot bath beforehand assists the action of the expectorant; a smart purge is of use, and in gouty subjects affords marked relief. A teaspoonful of Rochelle Salt for children, preceded by 1 or 2 grs. of Grey Powder, and in adults a 5-gr. Blue Pill, followed by a couple of wineglassfuls of Friedrichshall Water, may be given.

The harassing dry cough under this treatment gives place to a moist, easy, and loose expectoration, after which the Antimony may be discontinued, and the following administered in teaspoonful doses after meals: Pot. Iodidi, 1 dr.; Vini Ipecac., 3 drs.; Spt. Chlorof., 3 drs.; Inf. Senegæ ad 4 oz.; misce. Or, Ammon. Carb., 1 dr.; Spt. Ammon. Arom., 4 drs.; Aquæ Chlorof. ad 6 oz.; misce. A tablespoonful, with water, every four hours.

Carbonate of Ammonia in full doses may also be given in the first stage of the affection with advantage, if there be any indication for a stimulant. Should the cough appear to be out of proportion to the amount of expectoration present, it can be allayed with anodynes, but no greater mistake can be made by the physician than simply to order Morphia or Chloral to quiet cough when the tubes are filled with secretion. In young and also in aged patients this practice may be followed by fatal results. It checks the expectoration, and renders it more tenacious; at the same time sensibility being diminished, the cough does not occur, and the secretion gathers in the tubes.

Murrell gives 5 gr. doses of Terpene Hydrate in combination with Tar Syrup and flavouring ingredients, and Ringer advocates Tincture of Belladonna in 10 min. doses.

When the symptoms continue unrelieved by the above treatment and the accumulation of mucus in the smaller divisions threatens asphyxia, an emetic dose of Carbonate of Ammonia may be given, and Strychnine hypodermically will be indicated with Alcoholic stimulation, and Oxygen inhalations may be resorted to. The prominence of suffocation symptoms will probably be due to extension of the catarrhal inflammation to the finest ramifications of the bronchial tree when the treatment indicated for the capillary type of the disease must be promptly instituted.

The *preventive* treatment of acute catarrhs is an important matter; perhaps quite as much mischief is done by the coddling system as by the new-fangled craze of "hardening" children by indiscriminate cold bathing and indiscreet exposure in all weathers. The medical adviser should strike the happy mean and insist upon a rational amount of warm clothing and an abundant supply of pure air. The dread of "draughts" is the most serious difficulty to contend against, as may be continually witnessed by those who travel much in crowded public conveyances where many timid individuals insist upon tightly closed windows, and are ignorantly happy and content in breathing a vitiated atmosphere laden with the microbes which inevitably produce catarrh of the nasopharynx and bronchi. In very susceptible individuals the use of the new Combined Vaccine for colds every 3 or 6 months as described in the Author's work on *Materia Medica and Therapeutics* is a most effective preventive, and when injected at the commencement of an attack often speedily causes its abortion or modifies its intensity considerably.

CAPILLARY BRONCHITIS.

Inflammation of the fine bronchial tubes must be treated more actively owing to its greater gravity and urgency, especially as the disease is more commonly met with in children who may rapidly succumb to the asphyxia liable to supervene upon the blocking of the small bronchi by secretion and by collapse of the air cells as in the form of the affection liable to follow the bronchitis of measles and whooping-cough, which is usually designated catarrhal pneumonia. Here, in addition to warmth in bed and copious steam inhalation in a room whose temperature must be kept at 65° F., Morphia must be most cautiously exhibited, if given at all, and in the old or very young it must be withheld altogether.

When the tubes are found already full of liquid secretion the administration of diaphoretics and expectorants is not indicated. An emetic should be given without delay; in the case of a child

a teaspoonful of Ipecac. Wine, and for an adult 30 grs. of Carbonate of Ammonia well diluted may be given. In urgent cases Apomorphia may be given hypodermically, but not till a previous injection of Strychnine has been employed to avert cardiac depression. Sinapisms to the front and back of the thorax should be applied, and as a rule continuous poulticing by Linseed Meal is not advisable, though it may be resorted to from time to time if the breathing be found to be benefited.

Where the secretion is tough or adhesive, expectorants are clearly indicated, and Antimony as in the milder form of bronchitis is the most reliable; it should always be prescribed from the first in combination with full doses of Ammonia, and continued till liquefaction of the sputum is effected, and a mild degree of nausea is excited. Apomorphia may be tried in doses of $\frac{1}{8}$ gr. by the mouth every 3 or 4 hours should the secretion keep scanty in adults. A safer expectorant for children is Ipecac. Wine in 20-30 min. doses.

R. *Vin. Antim.* *ʒiv.*
 Spt. Ammon. Aromat. *ʒj.*
 Spt. Chlorof. *ʒiv.*
 Aquæ Ammon. Acet. *ʒij.*
 Aquæ ad *ʒviiij. Misce.*

Ft. mist. Cpt. ʒss. secunda quaque hora ex aqua.

Examination of the condition of the sputum will give valuable information as regards the dosage of expectorants. When this becomes excessive their use should be suspended, to be resumed again when the secretion becomes scanty. As a rule emetics are seldom indicated in the acute suffocative catarrh of adults, but their use must be a part of the treatment in every case of the disease occurring in children where usually the mechanical expulsion of bronchial secretion is often defective. The child should be made to vomit occasionally by doubling or quadrupling the dose of the expectorant mixture containing the Ipecac., and this may be repeated once or oftener during the 24 hours, as little depression follows the act of emesis in childhood, and sometimes it may be found necessary to awake the patient, should the breathing become laboured during sleep.

Ewart advocates mechanical aiding of the expiratory act by the pressure of the attendant's hands placed over the axillary bases of the lungs at the end of the expiratory act.

It may be sometimes necessary in very young children to resort to artificial respiration or alternate hot and cold douches or to dash a little cold water over the chest to assist inspiratory efforts in the presence of suffocative or cyanotic symptoms. Dry-cupping or the application of a small blister often does good, and should symptoms

of pulmonary engorgement occur in the adult a vein may be opened; leeching is valueless. Sometimes the breathing difficulty may be relieved when spasm is present by causing the patient to inhale the vapour of boiling water to which a teaspoonful of Tr. Benzoini or Succus Conii has been added, and sprays are often useful.

From the first, the danger of asphyxia is to be anticipated in all severe cases, and Oxygen should be supplied and ready for administration as soon as the cyanotic condition gives warning that the aeration of the blood has become seriously interfered with, the rubber tube attached to a cylinder of the gas may be held a few inches from the patient's mouth, and the inhalation from this small jet may be continued for ten minutes at a time at frequent intervals.

The state of the heart will require careful attention all through the attack, especially in adult patients, and Strychnine hypodermically will often be indicated all through the illness. For the same reason Alcohol is sometimes required, but should never be administered in doses sufficient to tranquilise the respiratory centre, and 5 oz. Whiskey daily should be seldom exceeded even in patients who have accustomed themselves to the drug. Wine whey in the case of children and feeble infants affords the best means of supplying the stimulant, and may tide them safely over periods of extreme debility and danger.

In the presence of marked cardiac weakness and in patients with valvular disease, Digitalis should be administered from the start, whilst the Strychnine is given twice a day hypodermically. The following is a good combination affording a means of supplementing the expectorant with a cardiac tonic and a stimulant, viz.: Tr. Digitalis ʒij., Spt. Amm. Ar. ʒj., Spt. Ætheris ʒiv., Sodii Iod. ʒss., and Aquæ ad ʒviij., of which ʒss. may be given every 4 hours.

Only when much spasm is present should Lobelia be employed owing to its depressant action on the heart, and Pilocarpine should never be used. The physician will be wise in dealing with such a serious disease to confine himself to the use of the well-tried and older expectorants as ammonia, tartar emetic, and ipecac., with the peculiar effects of whose action he is most intimately acquainted. Quinine, so frequently recommended as a tonic in the different types of bronchitis, is best avoided; it often dries up the sputum and increases the difficulty of expectoration. In the resolving stage no drug is of such value as the Iodide of Sodium; after a few days under its use the thick purulent expectoration may often be observed to become transparent and almost liquid.

It is needless to dwell upon the diet, as the nature of the affection obviously demands that this should be of liquid and highly nutritious food administered in small quantities at a time and very frequently. Thus milk, strong soups, beef essences, and

meat juice with beaten-up eggs are clearly indicated. Flatulence and constipation must be guarded against. Sleeplessness is best met by Paraldehyde ; all hypnotic drugs which depress the respiratory centre must be avoided. During convalescence great care must be taken to avoid chills. After a serious attack it is advisable when possible to send the patient to a warm seaside resort as Torquay, or on a trip to Madeira or the Canaries.

Plastic or *Croupous* bronchitis is often little influenced by ordinary expectorant drugs, and there is no treatment known which exercises a specific action over the formation of the fibrinous casts, though steam inhalations and sprays of Lime Water and of solutions of Lactic Acid, Papain, Trypsin and Pepsin have been employed with the view of causing their solution. In the acute attacks Pilocarpine and Tartarated Antimony may be tried along with other agents useful in the treatment of acute bronchitis, and emetics are useful for dislodging mechanically the fibrinous plugs.

BRONCHITIS, Chronic.

A careful survey of the patient's environment should be made, and when any cause of bronchial irritation is discovered, the first step in the treatment should be its removal when such is possible. Thus, if dependent upon the inhalation of foreign particles, the patient must change his environment and any occupation necessitating the breathing of a dusty atmosphere. If his means permit, removal to a warmer and drier climate is necessary ; the selection of a residence will be referred to later on. If gout be the cause (this is frequently so in *drv* catarrhs), this malady will require careful attention. Should the chronic catarrh be caused by long-standing congestion of the bronchial mucous membrane, the result of valvular lesion or cardiac failure, much can be done by strengthening the heart and improving the circulation. In those cases where faulty elimination of effete matters by the kidney appears to aggravate bronchial trouble, the treatment for chronic uræmia will give relief. The presence of emphysema will be an indication for tonics and measures directed to the maintenance of the general health.

Acute attacks supervening upon the chronic condition are very frequent and must be met promptly by the measures already discussed. A rational supervision of the clothing which will prevent chilling of the surface of the body and temporary congestions of the bronchial surface is essential.

The treatment of chronic bronchitis by drugs resolves itself into the administration of such substances as will alter the action of the diseased bronchial surface. Iodide of Sodium or Potassium is the most valuable agent for this purpose ; not only does it afford a means of rendering tough adhesive sputum liquid and easy of expulsion, but its alterative action over the mucous membrane may be seen in its power of often changing the purulent into

a purely mucous sputum, and it is by far the best drug for the routine treatment of asthma and emphysema, which are often associated with chronic bronchitis.

The peculiarity of the cough which is always present requires careful consideration ; should it be dry and the efforts at expectoration difficult the physician will have to satisfy himself, by close examination of the symptoms, whether the patient is not coughing much more than is really necessary to get up the expectoration. This is a point of vital importance in the treatment of chronic bronchitis. Upon the decision arrived at will depend the administration or prohibition of sedative remedies. By checking cough much good will be done, if this cough can be seen to be useless, but if, by checking cough, expectoration accumulates in the tubes, much harm may result.

Morphia or Opiates should, therefore, in the chronic as in the acute disease, be administered with great caution, and if the physician is in doubt he should order only small doses, to be suspended if lividity or drowsiness appear, and by prescribing a stimulating expectorant along with the sedative the minimum of risk is encountered. Heroin, which is diacetyl-morphine, possesses the sedative action of opiates without checking the bronchial secretion in amount. Dionin, another morphia derivative, acts similarly.

Thus in *dry* catarrh, with much difficult cough and little expectoration of a thick adhesive kind, the best treatment will be a mixture like the following :

R. *Potassii Iod.* *ʒj.*
 Spt. Ammon. Aromat. *ʒss.*
 Ammon. Chloridi *ʒij.*
 Heroin Hydrochlor. *gr.j.*
 Aq. Chlorof. ad *ʒviij. Misce.*

Fiat mistura. Signa.—"A tablespoonful 3 or 4 times a day."

Or a teaspoonful of the following may be given 3 times daily after food : Apomorph. Hydrochlor., 2 grs. ; Codeinæ, 3 grs. ; Vini Ipecac., 6 drs. ; Glycerini et Aquæ ad 3 oz. Misce.

Alkalies have the power of diminishing the viscosity of the expectoration, and hence the value of various mineral waters as Vichy, Ems., &c. Where from any cause there is fever present, as in bronchial attacks in phthisical patients, there is no combination gives such relief as a solution of Bicarbonate of Potash in effervescence with Lemon Juice, the Citrate of Potash being a valuable expectorant, 3 drops of Morphia solution may be added to each dose.

In chronic bronchitis, associated with *profuse* purulent or muco-purulent expectoration, sedatives of all kinds are contra-

indicated which tend to depress the respiratory or coughing centre; as pointed out by Yeo, remedies must be used which have a specific action upon the inflamed membrane, and to this important class belong all the volatile expectorants and those containing some active ingredient excreted by the bronchial surface: Turpentine, Ammoniacum, Asafetida, Balsams of Peru and Tolu, Copaiba, Creosote, Guaiacol, Petroleum, Cubebs, Eucalyptus, Sulphur, Garlic, Tar, Terebene, Oil of Sandal Wood, Myrtol, Camphor, Terpene Hydrate, Terpinol, Ammonia, and many others.

Tar is about the best member of the group. It may be given in capsules, pills or mixture, emulsified with suitable excipient, but Tar Water (1 to 10) taken in wineglassful doses, is an inelegant but efficacious preparation. Ringer and Murrel found 2-gr. pills every three or four hours most efficacious in winter cough and bronchitis with profuse expectoration. (Yeo advises inhalations of Tar by forming a spray of the water by means of a Seigle's spray producer; he adds 10 per cent. of Carbonate of Soda to good ship's Tar, to neutralise the irritating pyroligneous acid, and boils the mixture on a plate over a spirit lamp in the patient's room for fifteen minutes once or twice a day.)

Creosote may be given in capsules, and the internal administration supplemented by inhalations, fumigations, or sprays. The creosote chamber is the best remedy where there is foetus in the expectoration. There are few routine remedies which give better results than a course of Sulphur when taken alternating with Cod-Liver Oil.

Ammoniacum is a most valuable expectorant for the chronic bronchitis of the aged. It relieves wheezing and promotes expectoration. A valuable stock mixture may be cheaply prepared for hospital use by adding Ammonium Chloride and Compound Camphor *Liniment* to the official mixture of ammoniacum.

Terebene, in doses of 10-15 mins. in capsule or upon sugar, is a good remedy in winter cough and in bronchitis with emphysema. It may be used as an inhalation.

Squill, Senega, Ipecacuanha, Actæa, Cocillana, Lobelia, Serpentaria, Chekan, Grindelia, Hydrastis, Physostigma, Sanguinaria, Stramonium, Hyoscyamus, and Belladonna have been all tried with success from time to time in the treatment of chronic bronchitis.

A favourite remedy in the chronic and subacute attacks of bronchitis in childhood, and the most convenient and safest, is a mixture of equal parts of Wine of Ipecac. and Syrup of Squill; for a child 1-2 years old 10-15 drops may be given every 3 hours, and as an emetic 1 teaspoonful. Perhaps no combination or mixture is so universally used as the following in chronic bronchitis with emphysema. Patients continue its use for years after discarding all others. It owes its virtue to the Ammonia contained

in it, whilst the senega keeps the cough centre wide awake, so that the tubes are being continually freed of their secretion, which is also rendered more easily evacuated.

R. *Ammon. Carb.* gr. lxxx.
 Tinct. Camph. Co. ʒvi.
 Tinct. Senegæ ʒiv.
 Infus. Senegæ ad ʒviiij. *Misce.*

Fiat mist. Capiat ʒss. quater in die ex paululo aquæ.

For chronic bronchitis with *exceedingly* profuse discharge, *i.e.*, cases of bronchorrhœa, an occasional emetic and full doses of a mixture of Ammoniacum, Ammonia, and Senega afford the best routine treatment. Copaiba is a valuable drug in some cases; it may be given in capsules or in a mixture with Liquor Potassæ, or in the form of the paste mentioned under Gonorrhœa. Opium or sedatives are fatal if given in even fair doses, and Ipecac., Tartar Emetic and Iodides which increase the amount of the sputum are only indicated where this is very adhesive or ropy.

Strychnine, by stimulating the respiratory centre, becomes a valuable expectorant. It may act also, according to Gairdner's theory, by stimulating the "scavenger" muscles and increasing the activity of the expulsive mechanism in the bronchi. It may be combined with Belladonna with great advantage where there is much secretion and *weakened expulsive powers*, and should be an ingredient in every mixture prescribed in chronic bronchorrhœa, especially when the heart is weak.

Though the list of expectorants contains more than 100 remedies of undoubted value, the physician will find that most of the cases of chronic bronchial trouble can be well combated by one or more of the following list, beyond which the writer seldom finds it necessary to travel:—Alkalies, Ammonia, Tar, Squill, Ammoniacum, Ipecac., Creosote, Apomorphia, Pot. Iod., Senega, and Sulphur compounds, of which Ichthyol, Onions, and Garlic are not to be forgotten.

Sprays and inhalations in chronic bronchitis occasionally prove useful. Ringer and Murrell have obtained excellent results from a spray of Vin. Ipecac. in winter cough. This spray is used by atomising the ordinary Ipecac. Wine with a Richardson's apparatus or with a steam atomiser; generally the wine does best diluted with an equal bulk or more of water. About two drachms of the wine are sufficient for each sitting, and after a few trials the patient succeeds in taking it in deeply. Lobelia, Terebene, Pinol, Antimonial Wine, and Iodide of Potassium, 2 per cent. solution, have all given excellent results in chronic winter cough when used in the same manner. The spray produced by using in an atomiser or nebuliser, a 10 per cent. Menthol solution in pure

liquid paraffin is of much value in relieving unnecessary cough, but it is a mistake to use Cocaine for this purpose, as it tends to set up after a time a congestive state of the upper respiratory tract.

The Chloride of Ammonium Inhaler is of undoubted value, especially in cases of chronic catarrh of the trachea, larynx, and larger bronchi. It is, however, inferior to the method of filling the sick room with the fumes of the nascent salt as mentioned under Bronchiectasis.

Eucalyptus, Carbolic Acid, Creosote, and most of the volatile expectorants and antiseptics are of value when administered as inhalations, especially where there is marked fœtor or decomposition of the bronchial secretion.

Any of the volatile drugs can be used as an inhalation, by simply adding them to very hot water and then inhaling their vapour in combination with that given off by the water. Compound Tincture of Benzoin and Hemlock Juice are the most frequently employed.

By saturating the air of the room with Turpentine much good can be done in chronic bronchitis, and if hæmorrhage be present there is no remedy to equal it. It can be poured upon the surface of hot water in large open vessels, placed about the patient's bed.

Volatile antiseptic expectorants may be placed in a dry respirator and worn for hours during the day. The following is a good formula : Thymol, half a part ; Carbolic Acid and Creosote, of each one part ; Spirit of Chloroform, six parts. The Oleum Pini Pumilio is an agreeable and efficient alterative and expectorant when inhaled.

Oxygen inhalation should be resorted to as in acute bronchitis when any degree of cyanosis supervenes, and though the theoretical objection is promulgated that it can be of no use since the asphyxia is caused by the shutting out of the air from the pulmonary vesicles by mucous secretion, nevertheless unmistakable relief nearly always is secured by judicious administration, the gas obtaining admission to the air-cells through many unblocked bronchi.

Inhalations of compressed air administered in a specially constructed chamber have been vaunted, but unless much emphysema be present their use is contra-indicated.

Counter-irritation is of value in chronic bronchitis, and it may be accomplished by Iodine, Acetic Acid, Croton Oil, Capsicum, Cantharides, Mustard, Tartar Emetic Ointment, or the actual cautery as practised in France, or any other irritant, but as a rule the volatile expectorants, which are also revulsives, are very much superior. Thus Oil of Eucalyptus or Pinus Pumilio with Camphor, or the Lin. Tereb., or Lin. Tereb. Acet., or Stoke's favourite application, of which the following is a modified formula, may be employed :

R. *Spt. Tereb.* ʒiii.
 Acid. Acetici ʒxii.
 Ovi Vitellum i.
 Ol. Limonis ʒj.
 Aquæ Rosæ ad ʒvj. *Misce.*

Fiat linimentum.

These applications act (1) by their revulsive action ; (2) the friction assists the expulsive efforts, and dislodges collections of mucus ; (3) the vapour clings to the skin and clothes of the patient, and is gradually inhaled ; and (4) some of the drug also is absorbed through the unbroken skin, and reaches the pulmonary tract through the blood.

Manual compression or massage of the chest and abdomen in expiration is useful where, owing to bronchial dilatations, or cavities, or weakness in the expiratory apparatus or mechanism, accumulations of secretion are liable to occur.

The question of a suitable residence is important for those whose means permit, and a sojourn at any of the Continental Spas, where the free use of alkaline waters may be tried, as at Ems, Braun, Soden, Mount Doré, &c., or any place at home where natural sulphur water may be had, as Harrogate (in the summer). If the patient finds that a moderately warm winter climate suits his breathing, he may go to Mentone or San Remo, where, however, chills must be carefully guarded against, or if a still drier atmosphere is desired, Egypt or the Nile, Algiers, or Tangiers will be best. Should, however, a soft or sedative air be desired, Madeira, Pau, Torquay, Penzance, Bournemouth, or Isle of Wight may be recommended.

A prolonged residence at the pine forests of Arcachon, or nearer home—at Bournemouth—is very advisable in young bronchitic patients where phthisis is dreaded.

BRONCHOCELE—see *Goitre*.

BRONCHOPNEUMONIA—see under *Bronchitis (Capillary)* and *Pneumonia*.

BRUISES.

If the bruised or contused part is seen immediately after injury before extravasation has occurred, this may be prevented by firm pressure over a pad of cotton-wool or by the application of ice or an evaporating lotion. A cold saturated, recently prepared, solution of Chloride of Ammonium is a good application to orbital contusion where a "black eye" is dreaded. The juice of the fresh root of *Convallaria* and Solomon's Seal is reputed to be of great value for the same purpose. *Arnica* is of little or no value, and

often produces dangerous erythematous rashes, which may spread from the site of application over the entire body.

When extravasation of blood or ecchymosis already has taken place, warm Spirit Lotion, covered with oiled silk, and padded over with thick layers of cotton-wool, and bandaged moderately tightly, is the best practice. Absorption is always hastened by massage. The surgeon should be very slow to incise the skin when even extensive extravasations of blood have occurred; these as a rule, if let alone, will become absorbed in a short time, while the admission of air is fraught with great danger. The aspirator may, however, be safely used where the removal is absolutely necessary. Large hæmatomas may be incised under aseptic conditions; bullæ should be snipped and an antiseptic dressing or dusting powder applied. Where large doughy extravasations remain under impervious skin, their absorption may be hastened by mild counter-irritants as Camphor Liniment, &c., combined with massage and pressure. Pain should be relieved by local anodynes like Aconite or Belladonna Liniment. Leeching should be avoided owing to the danger of sepsis through the punctures as the damaged tissue has its resisting powers much weakened.

BUBO.

The soft venereal sore caused by Ducrey's bacillus is very liable to cause suppuration of the lymphatic glands in the groin, and the gonococcus acts sometimes in a similar manner. The resulting swelling or bubo is to be differentiated from the true syphilitic swelling, which is of almost stony hardness and is painless and non-suppurative.

Absolute rest to the part is essential, and sometimes the pressure of an elastic bandage over a firm padding of cotton-wool may prevent suppuration. This may also be effected in the early stage of the bubo by painting the skin over it with Liquor Iodi or Iodized Phenol (1 part of iodine dissolved in 4 of carbolic acid), or by coating it with strong solution of Nitrate of Silver, or even by the use of ice or an evaporating lotion; Leeching is objectionable at all stages owing to the danger of infection through the bites. The application of a Klapp's suction bell over the swollen gland for 10 to 15 minutes causes hyperæmia of the skin, and may produce abortion of the swelling. Where much acute inflammatory pain is present hot fomentations may be applied or warm poultices used. A good routine application is Ichthyol and Glycerin (1 in 4). In all cases the original sore should be cleansed and treated with antiseptics.

Some surgeons inject a few minims of Carbolic Acid, a 1 per cent. solution of Benzoate of Mercury or Liquor Iodi with the view of preventing suppuration, but often these aggravate matters and hasten the breaking down of the gland tissue.

When the pus has already formed a small incision should be

made parallel to Poupart's ligament through the tissues down to the swollen gland without waiting till the skin becomes infected. Through the opening the softened gland may be removed when its contents are found not to be entirely liquefied or the cavity may be curetted and packed with Iodoform gauze. Thomson and Miles recommend one or more small incisions and the application of the suction bell afterwards.

Where the skin has already become undermined, the edges of the wound may require to be excised in order to facilitate healing and prevent sinus formation, the resulting sore being treated as a chronic ulcer after cleansing with Hydrogen Peroxide, 1 in 500 Sublimate solution, or by dusting with Iodoform. When sinuses remain these should be filled with Bismuth Jelly. See also under Chancre.

BUNION.

The cause of this condition (which is usually associated with hallux valgus or deviation of the great toe from the inner line of the body) is the wearing of narrow boots or shoes. These must be discarded for wide-soled boots with square roomy toes and low broad heels.

By a simple device the writer has prevented the development of the affection in cases coming early under notice. He directs the patient to place the tendo Achilles of one foot between the great and second toe of the opposite one before going to sleep on his side; this plan is applicable when only one foot is affected. A splint of leather moulded to the inner side of the foot to which the great toe can be bandaged at night, "Digitated" socks with a separate compartment for the great toe and boots containing a toe-post on the same principle should be worn through the day.

The induration constituting the bunion proper is often painful and may require the application of soothing lotions or counter-irritants. Strong Iodine or pure Carbolic Acid may be applied to the inflamed thickening and rest must be prescribed. In mild cases pain may be relieved by wearing a suitable felt plaster with a large central opening; this gives considerable relief when rheumatoid arthritis complicates the case.

In cases of marked deformity, pain and lameness, the only treatment of any use is to make a free incision by Mayo's method, and remove the head of the metatarsal bone by forceps, after which the end of the shaft of the bone is trimmed as smoothly as possible, and the flap of the bursa secured by sutures, so as to separate it permanently from the cartilaginous surface on the base of the first phalanx. Less radical operations have been tried by removing only the inner part of the head of the metatarsal bone, and by performing this subcutaneously; they are, however, less satisfactory; the sesamoid bones should be also removed in most cases.

BURNS AND SCALDS.

Preventive treatment in the ordinary sense of the word need not be considered, but the consequences of a burning accident may often be so minimised that a fatal issue may be prevented by presence of mind and prompt action at the time. The victim should be instantly rolled over on the floor, or enveloped rapidly in a heavy loose garment, rug, or carpet so as to exclude the air and stop the combustion of his clothing, instead of permitting him to rush frantically through the air fanning the flames, and to plunge him into water is a grave error. In the case of limited burns, when the skin has been for a short time submitted to even an intense heat, if a saturated Solution of Bicarbonate of Soda be *instantly* applied, no vesication or destruction of cuticle occurs, and pain is almost instantly relieved. In this simple way, what would otherwise have been a troublesome and painful burn will be effectually prevented. But the application must be made without delay, and before the cuticle is raised, and the quickest way is to apply the dry salt made into a paste with a little water, and gently rubbed over the smarting spot for a few minutes, adding a few drops of water from time to time.

In the case of severe and extensive burns the first treatment required is to relieve the shock and collapse, and bring about reaction, by enveloping the patient in flannel or wadding and administering liberal doses of hot stimulants, whisky punch, or wine whey ; warm saline solution by the rectum or subcutaneously may be necessary, and a hypodermic of Morphia when the pain becomes intense as the symptoms of shock begin to pass off ; and whilst this is being done only very limited attention should be bestowed upon the burn itself.

After the relief of shock the clothing must be carefully cut off, piecemeal, and only a limited portion of the surface of the body should be exposed at one time. Corrosive liquids, if they have been the cause of the burn or scald, should be washed off with an appropriate solvent. Thus, scalds by boiling acids should be lightly washed with warm water or weak alkaline solutions, and boiling tar scalds may be gently cleaned with any warm bland oil or lard.

In the case of extensive burns and scalds, even when only of the first or second degree, which are often the most painful, and especially in all degrees of extensive burning occurring in children, a general anæsthetic is essential during the first dressing, and may be required also at subsequent dressings.

The choice of the application is important, and since the recognition of the grave part played by sepsis the use of the old-fashioned soothing and emolient Carron Oil is being abandoned for antiseptic solutions. But where the burn is of the first degree and the cutaneous surface is unbroken, no better dressing can be employed than lint, linen cloths, or a layer of cotton-wool soaked in the emulsion and kept in place by a light bandage.

Slight superficial burns may be treated by the application of powdered Starch or wheaten Flour. In burns of the second degree where vesication is always present, and in the deeper degrees of burning and scalding, the surface should be carefully cleansed by a warm antiseptic, as solution of Boric Acid, Condy's fluid, or other unirritating germicidal liquid before applying dressings. Where a *very large* surface of the body is superficially burned and the patient is suffering great pain, relief may be obtained by immersing the patient in a bath at about 98° F., consisting of Boric Acid Solution, and this plan with advantage may be continued throughout the treatment from time to time when the dressings require removal and sloughs are slow of separating. There is no doubt about the value of external warmth; in most cases the temperature of the body may be found depressed, and recently good reports have been obtained by the use of the hot-air bath.

All bullæ or blebs should be pricked at their most dependant point to evacuate the contents which are always full of micro-organisms; some authorities for this reason snip away their epithelial envelopes, whilst others prefer to preserve these as a covering for the inflamed skin beneath them.

The experience of recent years has proven that the best routine antiseptic dressing for burns and scalds of every degree of severity is a solution of Picric Acid, 1 part in 100 water; this is practically a saturated solution, but some prefer to use 1 in 200, with 10 per cent. rectified spirit. Boiled or sterilised lint or cotton-wool soaked in the solution should be placed in contact with the burned part, and covered with a layer of cotton-wool, the strips being so applied that they can be removed with the least degree of difficulty or pain to the patient. No impervious dressing should be applied over this, and on every third day the application can be removed and fresh lint applied. A 1 to 2 per cent. ointment is sometimes used instead of the aqueous solution, and Picric Acid Wool is also supplied ready for use.

Any loose dead and charred fragments may be removed by scissors during the first dressing, and at subsequent dressings the dead skin can be removed in a similar manner without employing any traction or force.

The great danger in all cases after the patient has been tided over the grave period of shock is sepsis from the absorption of toxic products contained in the charred tissue, or produced by the multiplication of extraneous micro-organisms; hence the necessity of the use of sterilised dressings and thorough cleansing with mild antiseptic solutions between the times of dressing. The indiscriminate use of strong antiseptics like Hyd. Perchlor., Iodoform, Carbolic Acid, &c., is to be condemned where the burned surface is extensive, since poisoning from their absorption is liable to occur, and, moreover, they tend to retard the separation of the sloughs. To facilitate the removal of the latter nothing is

better than hot Boric Acid fomentations ; where there is much moist discharge Boric Acid may be freely sprinkled in fine powder, or Iodoform Gauze may be employed in thick layers. The dressing, which by its absorptive and antiseptic qualities renders frequent changes unnecessary, is always to be preferred, hence ointments as a rule are to be avoided, though dressings of these are more easily removed. The long list of these preparations still recommended and used should be condemned ; most of them contain antiseptic substances insoluble in their fatty basis, and while the heat of the body liquefies the latter, it soaks into the superimposed dressing, forming a casing which keeps the injured tissues bathed in their unhealthy secretion, and the crude insoluble antiseptic acts as an irritant.

When all sloughs have separated or been cautiously removed, the granulating wound is to be treated upon general surgical principles, and where this is extensive skin-grafting by Thiersch's method should be resorted to early in order to hasten healing, diminish the danger of septic absorption, and minimise the risks of future deformities. Flabby granulations may be destroyed by solid Copper Sulphate, or by any stimulating lotion, by mild bandage pressure, or by the application of perforated green protective dressing.

The greatest care and attention must be bestowed during the healing process of deep burns when these occur in the vicinity of joints so as to avoid the deformities liable to occur as the tissue slowly contracts. In the face also this is to be carefully watched, and continual massage applied, skin grafting, and the division of bands, followed by stretching of the parts and other plastic operations, may be necessary. When the constituents of a limb have been hopelessly charred the only resource may be amputation after the shock has been treated.

X-ray burns, and those produced by electricity and lightning stroke, are to be treated upon the above principles ; the milder X-ray dermatitis may be soothed by the use of any of the emollient ointments suitable for acute eczema, but the slowly separating sloughs of the deeper type of the accident must be treated like burns of the fourth degree, and will usually require skin grafting.

Burns of the conjunctiva are generally the result of sparks of hot metal or caustics ; the best treatment will consist in the introduction of Atropine and the repeated flushing of the conjunctival sac with warmed Boric Acid solution applied by means of the eye-douche. When much inflammatory swelling and œdema is present the external canthus may require incision, and the greatest attention should be paid in order to prevent adhesion of the eyelid to the globe. Iritis and corneal ulceration must be treated by suitable agents and Eserine instilled occasionally. When the lids or adjoining portion of the face have been involved the resulting cicatricial ectropion can only be remedied by a plastic operation, the best of which is that devised by Wolfe, who

inserts a skin graft from the inner side of the arm after a free incision exposing a considerable raw surface beyond the free margin of the lid.

BURSITIS.

For acute inflammation of bursæ following injuries and wounds, rest of the limb on a padded splint, and the application of cold lotions or ice, generally suffice to bring about resolution. If much pain be present, poultices smeared with Extract of Belladonna, or hot fomentations may be applied; and if suppuration occur, which is liable when septic wounds are present, a free incision and subsequent syringing with very weak Sublimate Solution, followed by Boric Acid compresses, will be required.

The most frequently met with type of bursitis is that due to kneeling, and known as "housemaid's knee," from the peculiar swelling on the front of the patella. When acute it should be treated by rest and ice, or evaporating lotions. The chronic variety usually yields to daily application of strong Iodine liniment, applied freely (as each layer is allowed to dry it may be followed by a fresh one), so that blistering occurs. Should this fail, the fluid may be aspirated, and if it soon collect again, strapping or a splint and tight bandage may be applied after a second aspiration. Should the fluid again collect, a few drops of strong Carbolic Acid may be injected, or the fluid once more removed and a small syringe of Tincture of Iodine and water (1 in 2) may be injected and allowed to remain in for a few minutes.

Packing the cavity with Iodoform gauze after free incision is the best treatment where melon-seed bodies are found, as these are frequently of tuberculous origin in weak subjects.

When the bursal swelling resists the above agents, and interferes with the movement of the knee or elbow joint, the only satisfactory method is to dissect it out along with its thickened surrounding tissue.

CAISSON ILLNESS.

This affection, known also as Compressed Air and Diver's Paralysis, is due to the suddenness of change from the much higher pressure of the atmosphere in the diving-bell or caisson to that of the ordinary atmosphere.

The diver before reaching the surface is made to enter an intermediate chamber, or air-lock, where the pressure is gradually reduced, and when this decompression has been very carefully performed, and a sufficient time spent in the lock (15 minutes or more), usually no symptoms occur. When they do show themselves, which may be some hours afterwards, the paraplegia, and intense muscular and joint pains, vomiting, epistaxis, &c., can be relieved at once by replacing the patient in the lock and increasing the pressure.

The employment of a suitable air-chamber on the bank, in

which the pressure can be diminished very slowly and accurately, and in which divers liable to suffer from Caisson illness may be kept for a few hours if necessary, prevents effectively all trouble and relieves distress when this has already appeared.

The pressure in such a chamber should be reduced at the rate of about half a pound per minute in the act of decompression, after having been gradually raised to the ordinary working pressure and kept there for a few minutes.

Before entering the high pressure on first descending, the operative is submitted to a process of gradual compression in the lock, and in this other symptoms of the illness may appear; these, such as severe earache and giddiness, usually pass off when the diver is made to swallow air with the view of keeping open the Eustachian tube.

The severer symptoms on reaching the surface after passing through the air lock before decompression has been thoroughly accomplished are usually seen in stout plethoric subjects, and Morphia hypodermically is often necessary owing to the agonising pain. Venesection may be resorted to where unconsciousness supervenes. Where the paresis continues, rest with massage and electricity and the usual remedies indicated in chronic spinal myelitis must be employed.

CALCULI, Biliary—see Gallstones.

CALCULI, Renal—see Stone in the Kidney.

CALCULI, Vesical—see Stone in the Bladder.

CANCER.

Notwithstanding the unceasing and laborious research work on the pathology and therapeutics of this dread disease during the last decade, little advance has been made, and the death-rate must be regarded as having steadily risen when every allowance is made for the fallacies inseparable from large masses of statistics. The results of experiments in mouse cancer at one time led to the hope that the future treatment of the disease in the human subject would be found in serum therapy; but notwithstanding that a considerable degree of immunity can be established in this rodent, the conditions have been proved to differ fundamentally with those existing in human cancer. The search for a causal micro-organism has hitherto been unsuccessful, and the older view has revived that the disease is due not to a parasite but to some power which removes the natural inhibitory influence of the body over its normal epithelial cell constituents, which then proliferate and form the cancer tumour. Should this be proved to be the result of a toxic substance, the problem resolves itself into the quest for an antidote which will restore the lost balance, and the only hope of success lies in a close examination and study of the conditions which exist in the rare cases of spontaneous cure in

untreated cancer, and possibly in all instances of the disease since Handley has shown that the cancer cells undergo fibrotic and degenerative changes in the centre of the tumour while they continue to proliferate at its circumference.

The generalisation achieved by the genius of Butlin appears to shed new light on the pathology of cancer, which obviously will influence its treatment. In his recent lectures on "Unicellula Cancri" delivered before the Royal College of Surgeons recently (December, 1911), Butlin brings forth powerful reasons for considering the carcinoma cell to be an independent organism like many of the protozoa—not a merely changed body cell, but a new creation of animal being, the parasite consisting of a single cell being governed by natural laws as clear and well defined as those which regulate the life of other unicellular protozoans. The only apparent difficulty in accepting this view is the absence of evidence to show that the cancer cell undergoes a process analogous to fertilisation.

Radium treatment cannot be yet accepted as curative save in superficial examples of the disease; its success in rodent ulcer, which is undoubtedly cancerous, is already established. The action of radium emanations is akin to that of the following agent:

X rays have been demonstrated to possess unmistakable curative power over superficial cutaneous cancers as in the rodent type and even small epitheliomatous tumours of the skin can be made to entirely disappear under their application. Both radium and X rays, whilst exercising no real curative power on cancers occurring in internal organs or in the mammary gland, nevertheless possess remarkable influence in preventing or retarding new growths after the removal of the original tumour by surgical means. Wickham strongly recommends radium as a *prophylactic* against return and advises that the emanations through lead screens should be commenced soon after operation. Some surgeons apply the X rays or radium emanations to the surface of the open wound after the removal of the tumour. Where as in breast cancer the tumour has ulcerated and the case is beyond the reach of surgery, the X rays and radium relieve pain, check hæmorrhage and discharge, and thus may prolong life under comparatively comfortable conditions. By the use of either agent sometimes an inoperable cancer may be so modified in its character that the excision of the mass becomes justifiable. The danger of the X rays producing ulceration and even a malignant type of disease in the skin when used for other purposes must never be lost sight of.

High-frequency currents have been recently employed by the method known as *Fulguration*, introduced by Harte of Marseilles. Its best results have been obtained in those cases where the surgeon has been unable to remove the entire growth by the knife or curette, in which case excellent effects have followed by drawing

from the exposed raw surface numerous sparks by the use of a powerful high-frequency apparatus. This treatment destroys the superficial cancer cells and acts as a painless escharotic, but any specific selective action over the diseased cells is denied by several authorities, though the method has given unmistakably curative results in such cases as cancer of the tongue and superficial inoperable carcinoma of the breast. Coley's Fluid has proved useless in cancerous tumours, but its curative action in many cases of a purely sarcomatous nature must be regarded as fully proven. Trypsin, Pepsin and Papain have been tried as injections into the tumour or its immediate neighbourhood with the view of causing digestion or disintegration of the cancer cells, but the method has proved a failure, and the same may be safely said of injections of Formalin and other antiseptics.

The plans of ligaturing the vessels supplying the malignant mass, of excising the nerves and of removing the ovaries in breast cancer have been abandoned as curative agents. The use of serum obtained from animals into whose tissues cancerous products have been injected has practically been given up.

When all has been said that can be said of the X rays, radium and fulguration, the fact remains that early operation affords the best means of treating cancer. Not only the growth itself but the widest possible extent of surrounding tissue with all the neighbouring lymphatic glands must be removed, and the greatest care taken that no cancer cells are implanted in the wound. This latter result may be effected by avoidance of cutting into the diseased mass during operation, and by flushing the wound with unirritating antiseptics, or better still by exposure of the raw surface to the X rays before suturing and the systematic exposure for short periods of the site of the operation to their influence after healing has been accomplished.

Excision of epithelial cancerous growths by the use of *Caustics* (Arsenic, Lime, Zinc Chloride, &c.) instead of the knife has still something to be said for it. In the writer's opinion its only advantage lies in the fact that many patients consent to this form of operation without hesitation or delay who would otherwise postpone operations of a cutting nature till too late. If the X rays be skilfully employed after the separation of the slough it is possible that better results may be obtained than by the use of the knife in some cases.

CANCER OF THE BLADDER.—The use of the improved cystoscope has enabled the surgeon to diagnose the presence and nature of vesical cancer at such an early stage as will afford fair hope of the success of the removal of the growth, especially as the lymphatic system of the organ is so very limited that the tumour is for a long time circumscribed at its original site.

The malignant growths in the female bladder or the villous type of organism which is liable to take on cancerous action may be removed under Chloroform by dilating fully the urethra and

thoroughly curetting the tumour, whose base should be then freely cauterised.

The male patient should be placed in the high Trendelenburg position as recommended by Mayo, and after a free median incision the intestinal cavity and lips of the wound are protected by gauze pads in order to prevent the possibility of transplantation of cancer cells. The bladder being brought forward by tenaculum forceps is opened by a moderate incision, all urine sponged out and the growth excised with the entire thickness of the bladder wall when this has been found infiltrated, and the gap is then closed by a double row of catgut sutures. Where the tumour is superficial in extent it may be cut out along with its underlying healthy submucous layer by scissors, and the resulting raw surface thoroughly cauterised. Large portions of the bladder may be removed, and one or both ureters may be implanted into the fundus of the organ when their orifices or the neighbouring region is involved.

Complete cystectomy has been performed by Fenwick and others with success, the ureters having been dealt with by a previous operation which enables their lower extremities to be brought out and fixed by a small incision in the appendix region. In the female the ureters may be transplanted (previous to removal of the bladder) into the vagina, which can be afterwards closed so as to constitute a new vesical cavity.

In inoperable cancer of the bladder much relief has been obtained and the prolongation of life maintained under comparatively comfortable conditions by a bilateral ureterostomy which drains the kidneys through the loins or in the appendicular region.

Where the patient is unable to bear the shock of a serious operation, catheterisation and the use of local or constitutional anodynes, or free drainage of the bladder by a small perineal incision, may be resorted to.

CANCER OF BONE.—This is always secondary, and hence is often beyond the reach of operation, though amputation may be resorted to early when a limb bone has become affected, or the lower jaw may be excised sometimes successfully when the disease has spread from the lower lip. In mild cases of the latter infection, where only the surface of the bone is invaded, free gouging may be all that is required.

CANCER OF THE BREAST.—The only justifiable procedure is the entire removal *en bloc* of the whole gland, with its skin and surrounding fatty tissue, both pectoral muscles, or the greater portion of each, the muscular aponeurosis and the axillary glands; the supraclavicular lymphatics, when these latter are found to be involved, must also be removed.

The preliminary incision and the various steps of this radical operation may be modified according to the dimensions of the diseased gland and the practice of the operator. The usual skin

incision is one commencing about the middle of the clavicle, with the arm abducted and extending to the anterior fold of the arm-pit, and at a later stage continued so as to remove a large oval of skin overlying the gland and finally ending below the costal arch as far as the line of the sternum.

The dissection of the mass from the apex of the axilla (the insertions of both pectoral muscles having been divided) is commenced, everything being removed, including the fascia of the serratus magnus, and the axillary vein exposed for its entire course. In like manner the origins of both pectoral muscles are cut and the fascia dissected from the surface of the lower ribs, sternum and the upper part of the rectus and external oblique, after which the entire mass is separated and removed in one piece.

The removal of the glands above the clavicle in the triangle bounded by the clavicle, trapezius and sterno-mastoid must be effected when any sign of infiltration of these is found ; by altering the position of the arm this can usually be accomplished without division of the clavicle.

Drainage is provided by the insertion of a tube pushed up into the apex of the axilla, its lower end left projecting from a button-hole at the scapular angle and a moderately tight bandage being applied to the thorax over the dressings ; the unbandaged arm is abducted and supported upon a pillow.

The mortality of this formidable operation is almost nil, and a fairly useful arm results, though œdema may remain for a considerable time owing to injury of the axillary vein. The results are incomparably better than those obtained by the older and now abandoned plan of merely excising the mammary gland, and in a fair percentage of cases no return of the disease follows ; when this does occur the carcinoma appears in the bones, pleura or internal organs, and seldom in the scar tissue. The practice of following up the operation by the use of the X rays as a prophylactic against recurrence is gaining favour.

In inoperable mammary cancer relief may be obtained by local and general anodynes, the use of the X rays and antiseptics when ulceration has occurred. The progress of the disease is retarded by removal of the ovaries, but this is contra-indicated when the climacteric has been reached.

CANCER OF THE GULLET.—Extirpation of the growth is generally impracticable, and the use of dilating bougies is fraught with such danger of perforation and hæmorrhage that they never should be employed. When the patient is still able to get his food through the narrowed tube he may be long kept in a tolerably comfortable state by judicious feeding ; all nutriment must be liquid and administered at short intervals in small quantities and in concentrated form. Often the substitution of rectal feeding permits spasm, pain and irritation to subside after a few days rest from swallowing, when liquid food by the mouth may be again resumed.

When the obstruction becomes so complete as to prevent the entrance of even liquid food to the stomach, a Symond's Tube should be gently introduced through the stricture upon the point of a flexible bougie, and its funnel-shaped end made to rest upon the margins of the ring of diseased tissue above the obstruction ; it is then left *in situ*, with its attached thread hanging out at the angle of the mouth, which should be fastened so as to avoid its being swallowed.

Upon failure to insert the tube there is usually no resource left but to perform gastrostomy and feed the patient through the opening made into the stomach, but this operation is often too long delayed ; it should be performed before his strength has been undermined by starvation.

Kuester has recently reported favourably on the effect of Fibrolysin injections as a palliative administered with the view of inhibiting scar tissue growth in cancers of hard nature.

By the aid of the œsophagoscope it is now possible to remove small malignant growths by œsophagotomy when these are located in the cervical portion of the tube. The introduction of the principle of operating under differential pressure by the improved technique worked out by Meyer, who advocates the use of Sauerbruch's chamber, raises the hope that malignant growths in the lower part of the gullet may be removed by the mediastinal route. The essential feature in his suggested scheme consists in implanting the proximal stump of the œsophagus into the stomach after the latter has been pulled up into the thoracic cavity through a rent in the diaphragm.

CANCER OF INTESTINES.—When the diagnosis of malignancy has been decided upon and acute symptoms of obstruction are absent, the surgeon may open the abdomen, excise between clamps the portion of bowel affected and secure end-to-end approximation or lateral anastomosis by suturing. Thus after total excision of the cæcum the ileum may be implanted into the transverse colon after the obliteration of the free end of the ascending portion by sutures. Where the extent of the growth contra-indicates its removal, the intestine may be divided and its proximal end joined to the colon, the distal extremity being inverted and closed permanently by sutures. Where the descending colon is found diseased in its lower part the only resource will be to establish an artificial anus.

Where carcinoma of the intestine in any part of its course has already given rise to symptoms of acute obstruction, the surgeon must open the abdomen and incise the intestine above the strictured part ; should the patient survive the acute attack, an attempt may be afterwards made to excise the obstructed portion of the tube by a radical operation. In all cases where this latter is undertaken a complete removal of the lymphatic glands in the region supplied by the artery feeding the diseased segment of the bowel is necessary.

CANCER OF THE KIDNEY.—When by cystoscopic investigation the opposite renal organ is found to be free from disease, the cancerous kidney should be removed. The operation of nephrectomy for this purpose should be performed by the transperitoneal route, and not by the loin unless the growth be small. Sarcomatous tumours should be excised in the same way, and in all cases drainage of the extraperitoneal pouch from which the organ has been removed must be provided by a counter opening in the loin.

CANCER OF LIP.—When the patient consents to early operation all that is necessary in many cases is to excise the growth with a V-shaped portion of the entire thickness of the lip, cutting wide of the epithelial tumour, and bring the edges of the gap together with sutures. When the disease is of considerable standing the glands below the jaw will be found to be involved, and not only will the removal of a larger portion of the lip be necessary but the submaxillary and submental glands must be entirely extirpated and the lower jaw carefully examined and a portion or even the whole of the bone may require removal. In such cases plastic operations will be necessary, the skin below the jaw or that obtained by dissecting flaps above the angle of the mouth being utilised to prevent deformity.

In inoperable cases much benefit is obtainable by the use of the X rays and Radium emanations even when the deep cervical glands are invaded.

CANCER OF THE PROSTATE—see under Prostatic Enlargement.

CANCER OF THE RECTUM.—The only treatment holding out the prospects of cure is the complete removal of the lower end of the bowel, and in some instances success has followed the removal of the entire rectum and sigmoid. The most apparently hopeless cases sometimes succeed when the growth can be completely eradicated. No better instance can be quoted of the value of the operation than the following. A lady under the care of the writer early in 1886 suffered from mild symptoms of obstruction of the bowel for several weeks, caused by a malignant stricture just within the reach of the finger-tip; the case was pronounced as hopeless and unsuitable for operation by one of the most eminent and experienced surgeons in London. Mr. Cripps excised the lower end of the bowel from the perineum in May of that year, and the tumour was demonstrated to be malignant; this was further shown by a return of the disease in the colon many years afterwards, requiring colotomy. The patient is still living, a quarter of a century since the supervention of the disease.

The operation is only contra-indicated when the tumour is immovable and the neighbouring organs and glands implicated.

If the cancer be near the lower end of the rectum it can be excised through the perineum, and the sphincters usually will require removal; if high up, either the sacral or the combined operation should be selected and the sphincters preserved.

For the *perineal* operation a deep incision is made round the margin of the anus and prolonged in front to the middle of the perineum and backwards to the tip of the coccyx. The levator ani muscles are cut and the lower end of the gut is then dissected out, divided well above the growth, and the free end of the divided bowel is brought down to be attached by sutures to the margins of the anus when the tension of the parts justify suturing. The wound is then packed with gauze, and the bowels locked up for several days.

Kraske's operation is necessary to reach high growths; the incision of the former operation is prolonged backwards beyond the coccyx and over the middle of the sacrum for half its length; the coccyx, and if necessary the lower portion of the sacrum, is removed, and after the gut has been freed from all its attachments and brought down, it is cut across, the lower end being sutured to the sphincter when practicable. This latter desideratum is facilitated by division of the mesenteric attachment of the upper end of the rectum or lower portion of the colon. Some surgeons insist upon the necessity of a preliminary colotomy or colectomy with the view of preventing contact of the extensive wounded surface with the bowel contents during the slow process of healing; it should always be resorted to when the bowel cannot be emptied before operation and when symptoms of acute obstruction have supervened.

When evidence exists of involvement of the lower end of the colon the *combined* operation is selected. The abdomen is opened in the middle line, and after freeing the attachments of the rectum and sigmoid, cutting the bowel across and applying ligatures, the abdominal wound is closed and the divided bowel with its contained tumour is withdrawn through the perineal incision as before described, and the lower end of the divided bowel brought down.

In all cases beyond the hopes of excision much relief may be obtained by judicious feeding and enemata, and when obstructive symptoms supervene the operation known as colotomy, or colostomy, should be performed. This consists in opening the sigmoid flexure of the colon, and securing it to the lips of the skin wound in the left groin, thus establishing an artificial anus. When the symptoms are not acute this operation should be performed in two stages, the coil of bowel withdrawn being opened by the thermo-cautery three or four days afterwards in order to permit the formation of adhesions.

CANCER OF THE STOMACH.—The treatment of this affection, owing to the advances in abdominal surgery, is rapidly passing from the domain of the physician to that of the operating surgeon. The palliative treatment by drugs, restricted dietary, lavage, &c., should only be undertaken when the decision to abandon operative procedure has been arrived at. By persevering in any form of treatment which merely has for its aim the relief of symptoms

valuable time is lost and the disease passes beyond the reach of removal, whilst an early operation affords a justifiable hope that a permanent cure may be obtained, or a considerable prolongation of life under comfortable conditions effected. Dancel's statistics show that life is prolonged for a period of fourteen and a half months on the *average* by the operation of gastrectomy, and 11 patients out of 73 were found in good health three years and later after the operation. Spencer and Gask conclude that with early diagnosis and operation 50 per cent. of all cases of cancer of the stomach may obtain an average prolongation of life of two years. An exploratory incision skilfully performed for diagnostic purposes, where no attempt has been made to break down adhesions, may be regarded as devoid of risk. The disease when found by exploration to be very circumscribed and confined to the duodenum is sometimes removed by *pylorectomy*—i.e., excision of the pylorus—but this is usually unsuccessful and should always embrace the removal of a considerable portion of the stomach with all enlarged glands.

Partial gastrectomy is the recognised operation in all cases where the entire stomach is not to be removed and is suitable for the removal of all tumours near the pylorus. It is performed after ligation of the stomach arteries and the detachment of the gastro-hepatic and gastro-colic omentum by cutting the stomach vertically in two from the smaller to the larger curvature after a posterior gastro-jejunostomy has been first effected with the sound cardiac end of the organ and all diseased glands removed. The cut ends of the stomach and duodenum are then closed and invaginated; to insure that no leakage takes place from the blind extremity of the duodenum it may be fixed in the skin wound.

Total gastrectomy has been several times successful; the preliminary steps of the operation are the same, only that the entire organ is removed and the end of the divided duodenum or a portion of the jejunum is attached end to end with the lower end of the gullet.

Where the stomach on exploration is found to be diseased along with the glands on the front of the spine, or where the pancreas, liver or other organ is invaded, any attempt at a radical operation is unjustifiable. The only resource is to perform the operation of *gastro-enterostomy*, the variety known as *posterior gastro-jejunostomy* being the most suitable in nearly all cases. The rationale of this procedure is to make an anastomosis of the commencement of the jejunum with the stomach so as to do away with the pylorus and duodenum and permit the food to pass directly from the gullet into the intestine without being retained in the stomach. It is clearly indicated in all cases of pyloric obstruction which cannot be remedied by a radical operation.

The *palliative* treatment of gastric cancer consists in the

exhibition of remedies for the relief of the different symptoms as these show themselves. Appetite failure is one of the very earliest and most frequently observed features ; it may be met by vegetable bitters given before eating, and by far the best of these is Strychnine given with a few minims of Ac. Hydrochlor. Dil. The dietary should be as varied as possible, owing to the intensity of the anorexia ; it should consist mainly of concentrated liquid foods which will pass rapidly through the stomach, but in the very early stage fish, chicken and eggs may be freely given. At a later stage, when symptoms of ulceration of the growth occur, the dietary must be identical with that suitable for gastric ulcer, but peptonised preparations as a rule are seldom relished, and liquid nourishment must be given in small amounts and frequently. The appetite may be somewhat improved, and the gastric discomfort lessened by the administration of digestives which hasten the absorption of the food and curtail its stay in the diseased organ. In the early stages Pepsin is valuable when given with Hydrochloric Acid, which is usually deficient ; later on Papain with Sodium Bicarbonate and a trace of Morphine is highly useful when ulceration has occurred.

Symptoms of pyloric obstruction with great discomfort, organic acidity and flatulence may be often markedly relieved by lavage and the administration of Creosote in the capsular form.

Vomiting may be relieved by ice, Morphia in moderate amount combined with Bismuth and Hydrocyanic Acid, or by Creosote. Often sour buttermilk or Koumiss is retained when everything else is rejected, and occasionally a small blister over the centre of the epigastrium gives relief.

Pain must be relieved by Morphia, and Alcoholic stimulants, when these afford relief, should not be forbidden ; a small quantity of good brandy or whiskey may be administered frequently in milk.

Sleeplessness, constipation and other complications are to be met by appropriate remedies. As a rule the presence of a palpable or visible tumour in the epigastrium is a clear indication that the case has passed beyond the stage at which a radical operation can be successfully attempted, but the performance of a gastro-enterostomy should always be insisted upon when the pain, vomiting and distress are severe. All these symptoms may entirely disappear after the operation, and life may be prolonged for a considerable period in comparative comfort. In deciding upon the advisability of the earlier operation the error of excluding malignancy by detecting the presence of a fair amount of hydrochloric acid in the gastric contents should be always guarded against, and the fact should be also borne in mind that a very considerable percentage of cases of the disease as insisted upon by Moynihan occur in connection with old gastric ulcer.

CANCER OF THE TESTICLE.—All malignant tumours, including sarcoma in this region, should be met by a complete removal of

the diseased organ, with the overlying skin of the scrotum, the spermatic cord as high as the internal ring, and any glands found to be enlarged in the course of the iliac vessels. In prostatic cancer the entire gland, vesiculæ seminales and even the bladder trigone have been removed through a free perineal opening. In advanced cases the only palliative is to drain the bladder by a suprapubic or perineal opening.

CANCER OF THE TONGUE.—Small superficial patches of malignant growth which have supervened upon leukoplakia, especially when caustics have been employed in its treatment, should be excised (after oral sepsis has been met) by pulling the organ forwards with a ligature inserted into its tip and cutting out a V-shaped or elliptical piece of tissue containing the growth, after which the edges are to be secured with suture, and, as in all tongue operations, local antiseptic mouth washes must be continuously used.

When the growth is situated in the anterior part of the tongue and has involved the deeper parts, but has not extended beyond the middle line of the organ or invaded the floor of the mouth, Whitehead's operation meets all requirements. Oral antiseptics having been previously used for some days, the mouth is gagged and a ligature is inserted well behind the tip of the tongue on each side, so as to enable the organ to be pulled forwards. The tongue is next split along the median line, its attachment to the floor of the mouth and palate cut through with scissors, and the half of the organ containing the growth cut across well behind the tumour, after ligature of the lingual artery. Finally, the stump is secured by sutures to the sound half, which is bent back upon itself in order to cover the raw surfaces.

Where the growth involves the entire organ without invading the floor of the mouth, this may be completely removed by the last-mentioned operation, each half of the tongue being divided separately.

Where the tissues in the floor of the mouth have been invaded, these with the diseased tongue and all the affected lymphatic glands, with a portion of the lower jaw, have been successfully removed. The operation is varied to the requirements of each case, the most frequently employed being that of Syme, which consists of a median incision through the middle of the lower lip and extended to the hyoid bone, the symphysis being afterwards divided by saw and the diseased tissue dissected out and removed *en masse*. Sometimes a preliminary laryngotomy is essential. Butlin insists upon the *routine* removal of all the glands in the anterior triangle of the neck by a second operation after the removal of the cancerous tongue by the mouth; he never divides the jaw and always performs a preliminary laryngotomy. Operative measures in the hands of Butlin show that 57 patients were cured out of 200 and remained free from recurrence of the disease for periods of from 3 to 22 years

after the operation, and 10 per cent. died as the result of the operation.

The after-treatment is of importance, and since this must sometimes be left in the hands of the ordinary attendant his attention to the following details is essential. The great danger is that of an aspiration pneumonia setting in from the secretions of the mouth finding their way down the trachea and into the air cells. Hence the necessity for antiseptic mouth washes, the best of which is Permanganate solution, Carbolic sprays, Hydrogen Peroxide, or even weak Perchloride of Mercury, the latter only to be used occasionally, whilst the former are employed every hour.

Feeding must be effected by milk and soups administered from a feeding cup to which a short rubber tube is attached.

The ligature attached to the stump of the tongue should be carefully fixed outside the mouth so as to prevent the stump falling backwards and causing obstruction to the admission of air to the larynx.

CANCER OF THE TONSIL.—Removal of the organ to be successful must be resorted to at a very early stage of the disease, whether the affection be carcinomatous or sarcomatous. Whilst the latter type of malignant tumour can often be removed by the mouth, the operation for removal of a cancerous tonsil can generally only be effected after reaching the growth through an incision in the neck, as in the formidable operation for cancer of the tongue, the lower jaw often requiring division.

Palliative measures will consist of gastrostomy when swallowing is impossible, and tracheotomy may be required for the relief of laryngeal obstruction. Little can otherwise be done save by the almost continuous use of antiseptic washes and sprays.

CANCER OF THE UTERUS.—The unsatisfactory results of operative treatment in this disease have been mainly due to delay in diagnosis. With the recent attempts to bring under the notice of the profession in all European countries and in America the serious importance of an earlier recognition of the affection, and with improvements in the technique of the operation itself, already marked progress has been achieved. As in all other forms of carcinoma the tendency towards a more radical operative treatment has been rewarded by a steadily increasing percentage of cure.

Preventive treatment is being placed upon a firm basis. Cancerous disease of the cervix being very seldom met with in virgins, Bonney and others insist upon the causal influence of a chronic inflammatory condition of the cervix so common in married women. Hence the importance of the early treatment of simple erosions and ulceration by curetting, by tracheloplasty, or by supravaginal amputation of the cervix when these do not at once heal under milder treatment. But such measures are useless when cancer has already supervened, the only resource justifiable then being a radical removal of the entire organ.

Cancer may affect either the body or, more commonly, the cervix uteri. When the practitioner meets with a case he should first of all consider the possibility of a radical operation, as affording the patient the only hope of staving off the inevitably fatal result, and if he has any doubts on the subject he will do well to avail himself of the opinion of an expert.

The present position in regard to radical operation may be summed up as follows. The first operators on cancer contented themselves with a high amputation of the cervix, which is now universally admitted to be a totally insufficient operation and to afford only the most slender prospect of permanent relief. The operation of vaginal hysterectomy was then introduced, which was attended by a very low immediate mortality in capable hands. The after-results, however, were not particularly satisfactory, and although there are few operators who cannot point to cases of cancer of the uterus which still remain well years after vaginal hysterectomy, so great an authority as Pozzi has expressed doubt as to whether any case can be regarded as permanently cured, and the majority of honest observers would confess that at the best the ultimate results are disappointing. Things were in this condition when Wertheim, in 1906, strongly advocated abdominal hysterectomy, which had been abandoned by all but a few operators on account of the appalling operative mortality which had attended its performance. Wertheim was able to bring forward a long series of cases with an immediate mortality of 19 per cent., and a freedom from recurrence after 3 years of about 40 per cent. These results were the more remarkable as in his practice he operated on cases which would be regarded as much too far gone to afford any prospect of cure by the vaginal route. The result has been to greatly stimulate the performance of abdominal hysterectomy for cancer of the uterus, but it is, perhaps, still too early to say whether this operation offers a greatly enhanced prospect of cure to the patient suffering from uterine cancer.

At first the abdominal operation was reserved for cases which were not considered suitable for vaginal hysterectomy—*i.e.*, for the more advanced cases—and the immediate mortality in consequence of the very severe operation necessary was very high, ranging with most operators from 20 to 25 per cent. Gynæcologists are now, however, beginning to recognise that as the abdominal operation offers an opportunity of more complete removal both of the vagina, which is usually affected by direct extension of the growth and of the connective tissues of the broad ligaments and the iliac glands, which represent the line of lymphatic extension of the cancer cells, and as at the same time it affords complete immunity from the possibility of infecting the vaginal wound with cancer cells, advantages such as these may well be taken in the case of comparatively early cases of cancer, and afford a reasonable probability of more complete immunity from recur-

rence than the vaginal operation can possibly give. As the abdominal operation in these early cases can be performed with much more ease and rapidity than in cases where extension to the vagina, broad ligament, or lymphatics has already appeared, the operative mortality is lower, and at the same time the prospect of cure is greater.

The criteria which should be fulfilled to rank a case of cancer of the uterus among those suitable for a vaginal hysterectomy are—

1. The uterus must be freely movable—*i.e.*, the cervix should be capable of being drawn down to the vulva.
2. There should be no extension of growth beyond the limits of the cervix on to the vaginal vault.
3. The broad ligament should be free from gross extension of the tumour.
4. The uterus should be of such a size as to be delivered through the vagina without mutilation or undue traction.

By the adoption of the abdominal route there will be added to the list of operable cases those which have a limited extension of growth on to the vaginal fornices, and possibly a few with extension into the broad ligaments, but I feel that it is neither in the interests of the patient nor of the surgeon to attempt the removal of a uterus when it is as certain as can be that the line of separation must pass through instead of outside tissues already infected. It exposes the patient to a very grave immediate risk for no possible remote benefit, as experience shows that such operations are followed by death within a period as short as if they had not been touched at all. On the other hand, I feel strongly that in cases which afford even a slender chance of successful removal the patient should be given the benefit of the chance. Even on the most pessimistic calculation she obtains in return for the operative risk a prospect of freedom from recurrence for a period of anything from six months to five years, and the reasonable probability that the recurrence, if it does come, will take the form of an internal growth, and that she will be spared the misery of death from exhaustion and chronic sepsis due to a sloughing vaginal cancer, with probably a vesico-vaginal or recto-vaginal fistula.

It does not come within the scope of this volume to describe the operations of vaginal and abdominal hysterectomy, but the practitioner who is called on to carry out the after-treatment of cases which have been operated upon will find some hints as to treatment in the article on Operations, After-treatment of.

From time to time it will fall to the lot of the practitioner to attend an inoperable case of uterine cancer. The three main symptoms which he will have to combat are sepsis, hæmorrhage and pain. There are two main lines of treatment, the one of active interference, the other of masterly inactivity, and which of the two should be adopted in any particular case will depend

partly on the condition of the patient and partly on the physician. If the growth is sloughing extensively, with copious foul discharge and probably a good deal of hæmorrhage, it is wiser to adopt active treatment, which should take the form of curetting away under antiseptic precautions all the growth which can be removed. A copious douche is then administered and the vagina packed with iodoform gauze, wrung out of an antiseptic solution, in order to check hæmorrhage, which is usually fairly free. On the removal of the gauze a daily vaginal douche of 1 in 4,000 perchloride or drachm to the pint lysol or creolin is instituted and should be kept up till the end. The result is usually very satisfactory as regards freedom from sepsis and hæmorrhage.

Some authorities prefer to use a caustic after the curetting. The actual cautery may be applied to the raw surface. Or gauze wrung out of strong formalin solution, 50 per cent. zinc chloride solution or acetone, may be packed in through a speculum against the affected area, the lower part of the vagina being protected against the caustic by packing with dry gauze. The immediate result of such cauterization is the formation of a slough which separates in the course of a week or ten days, leaving a granulating surface behind. The pack should be removed in twenty-four hours and a daily douche instituted. It is worth mentioning that when the growth has extended on to the recto-vaginal or vesico-vaginal septum, the slough may extend to the wall of the bladder or rectum and a vesico-vaginal or recto-vaginal fistula be the result.

When there is little sloughing or sepsis, many cases get on fairly comfortably if a daily antiseptic douche is used, without any operative interference. In such cases the growth certainly appears to progress more slowly than in those in which the stimulus of active treatment with its accompanying increased blood-supply has been adopted.

For the hæmorrhage, if excessive, cauterisation and packing with gauze are the best lines of treatment. For the pain morphia must be given. It is best to give it at first only at night, but as time goes on larger and more continual doses are required as a rule.

Treatment with X rays and radium has been tried, but without satisfactory result.—R. J. J.

Cancer commencing at the vulva, in the labium, clitoris, or female urethra should be removed by a free cutting extending well beyond the diseased area, after which the glands in the groin should be thoroughly dissected out in all cases.

CANCERUM ORIS—see under Stomatitis.

CARBUNCLE.

Since this is the result of the introduction of the *Staphylococcus aureus* into the orifice of the cutaneous ducts, as in boils, the general indications are identical for the treatment of both affections,

though the gravity of carbuncle owing to the danger of sepsis and exhaustion is very much greater.

Constitutional treatment will include the administration of large amounts of liquid nourishment in a concentrated form, and often alcoholic stimulants are clearly indicated. Since the disease frequently supervenes upon the diabetic condition the dietetic measures suitable in glycosuria are indicated. Fresh air, Quinine and Iron in full doses, and in the presence of cardiac debility Strychnine hypodermically and Morphia for the relief of pain will be required.

Local treatment in the early stage will consist in the relief of tension by warm fomentations. Poultices, owing to the danger of sepsis, are contra-indicated, but hot compresses of lint saturated with strong Boric Acid solution and covered over with impervious tissue meet all requirements. Some surgeons recommend at this stage the injection through the skin of a 1 in 10 Carbolic solution in glycerin and water deeply into the underlying brawny tissue, about 1 dr. being introduced in all at several spots, with the view of aborting the necrotic process. At a further stage a free crucial incision through the skin down to the sloughing mass may be made, or, better still, a series of incisions which will connect the several openings together, and the warm antiseptic solution re-applied under oiled silk.

In the majority of cases healing will be expedited and the dangers of sepsis minimised by a free curetting of the slough after the incisions have been made, the scraping being extended till the removal of all indurated tissue down to the exposed fascia is accomplished. Strong Carbolic Acid is then to be applied to the walls of the resulting cavity, which should be thoroughly flushed with weak warm antiseptic solution, swabbed with Peroxide of Hydrogen and the wound covered over by boric compresses. This is becoming the routine treatment in the hands of most surgeons, though not without some protests regarding the danger of septic emboli being forced into the divided vessels during the scraping process.

Small carbuncles have been often completely excised by an oval or circular incision made wide of the diseased tissues, the cavity then swilled with hot boric solution, and packed with iodoform gauze.

The older plan of inserting caustics such as Chloride of Zinc, Caustic Potash, or Silver Nitrate through the natural openings is being abandoned; strapping the part encourages the retention of septic products.

The above local measures may be advantageously supplemented by Wright's Vaccine treatment as described under Boils, p. 91.

CARIES.

This is the term applied to a process in bone when the osseous tissue disintegrates piecemeal, corresponding to ulceration in the soft tissues. The disease being nearly always the result of tubercle,

constitutional treatment is invariably demanded, and the indications are the same as in tuberculosis and scrofula—viz., Cod-Liver Oil and Malt Extract ; overfeeding ; the removal of the patient to a seaside place sheltered from east winds and protected from the north ; open-air life ; Iodides (chiefly Ferri Iod.), Phosphates, Hypophosphites, Calcium Chloride, and other remedies mentioned under Scrofula and Tuberculosis.

Local treatment in the early stage will consist of absolute rest, and this is of great importance when the caries is in the vicinity of joints, and the application of splints should be so arranged that the entire limb is placed in a state of repose, whilst the appliance will be such as will enable the patient to move about in the open air. In cases where pus has not formed and the diagnosis of tubercle is made clear by an investigation of the opsonic index, sanatorium treatment supplemented by the Vaccine method of Wright, which consists in the injection of minute doses of Tuberculin, will often effect complete resolution. Some surgeons report excellent results from the use of Bier's plan of producing a local congestion of the part by constricting the vein without retarding the supply of arterial blood by the application of an elastic bandage to the limb for short periods daily. The local application of a weak Oleate of Mercury Ointment with gentle friction acts in a similar manner by increasing the flooding of the diseased area with lymph, bringing the protective fluids of the body into more immediate contact with the diseased area, which is comparatively shut out from the general circulation.

Where, in spite of these conservative measures, pus formation supervenes, more active local treatment is demanded, and the surgeon is never justified in waiting for the spontaneous discharge of matter, as this inevitably leads to the infection of the abscess cavity with pyogenic organisms. The skin having been sterilised, a free incision should be made and the softened or carious bone completely removed by curetting or gouging, every portion of diseased tissue being taken away, the cavity treated with iodoform emulsion, or wiped dry, and the skin incision sealed up by fine sutures without drainage in order to secure complete union by first intention without sinus formation.

A recent improvement in the technique has been introduced by Walton. After making the skin wound the lips of the incision are protected by gauze to prevent their infection by the contents of the abscess cavity, which after evacuation is swabbed out with Carbolic Acid and treated by a 1 per cent. Gelatin and Formalin solution, after which it is next dried by pumping in hot air, and then filled with sterilised Paraffin which melts at 120° F. The lips of the incision in the periosteum being sutured the skin wound is likewise stitched and primary union thus effected without the delay of healing by organised blood clot being necessary. Some surgeons prefer Moorhof's mixture, which consists of Iodoform 6, Spermaceti 4, and Sesame Oil 4. In all these methods

it will be noted that the fundamental point is to do away with the necessity of drainage. Styles advises the total removal of the lower end of the diaphysis when the disease is situated in a long bone, and most surgeons do a complete resection when the small bones of the carpus and tarsus have become carious. When sinuses have already formed the case must always be regarded as a septic one; pyogenic organisms plus the tubercle bacillus have then to be dealt with. Formerly there was no alternative left to the surgeon but to cut down upon the bone, removing the sinus tissue by careful dissection, and after gouging or curetting all carious osseous tissue and removing sequestra, should such be present, the cavity was packed with iodoform gauze and drained, healing occurring by granulation from the bottom. The results were generally unsatisfactory owing to infection of the newly incised surfaces. A very distinct advance has been made by Beck, who fills the cavity with warm Bismuth Jelly instead of gauze packing, and in many cases the sinuses have been made to heal up completely without any operation save the injecting of the sinuses through a fine syringe of the emulsion so as to penetrate every recess in the sinuous tract. This plan does away with the numerous antiseptics and caustics formerly employed for this purpose as described in previous editions. Should failure follow the injection, diseased bone is sure to be found at the bottom of the sinus, and a radical removal is essential to success before further attempts to excite healing by the Bismuth Jelly. Vaccine treatment as in the non-suppurative cases with open-air treatment should always be resorted to, and repeated investigations of the opsonic index made.

CARIES OF SPINE.

As this always is caused by the tubercle bacillus setting up a chronic tuberculous periostitis or osteo-myelitis the constitutional treatment is identical with that of phthisis or other tuberculous affection—viz., open-air life when possible, overfeeding, the use of Cod-Liver Oil, Iodide of Iron, Creosote, Hypophosphites, &c.

The most complete rest to the spine must be insisted upon from the first with the view of hastening repair and preventing angular deformity. The patient should be kept in the supine position upon a firm mattress without a pillow, and this position must be maintained for many months, in some cases for a period of 1 to 2 years, till all symptoms have disappeared. The practice of fixing the spine in an immovable plaster jacket as introduced by Sayre and allowing the patient to walk about should be abandoned. When the symptoms are acute, with much pain or paraplegia, such an appliance is of much value, but only when the recumbent position at the same time is rigidly enforced. A moulded leather or poroplastic jacket is, however, preferable, and in the case of dorsal or cervical caries in children a double Thomas's splint answers all indications. The use of these

mechanical contrivances enables the patient to be safely transferred to a couch which can be wheeled out into the open air, and sometimes a carriage drive may even be permitted when the supine position is strictly maintained. Their employment is also imperative in all cases where the child is restless and tosses or turns over in bed. They are a valuable help during the convalescent stage of the disease, when the patient is first permitted to assume the vertical position, especially in low dorsal or lumbar caries, in which case the jacket should embrace the pelvic bones, reaching downwards to the great trochanters.

To apply a Plaster of Paris jacket, the patient should be stripped of all clothing, and a neatly-fitting woven merino vest, without buttons, should be put on. It should reach below the buttocks. He is then suspended by the usual pulley and cord appliance, by means of a strap passing below the chin and occiput, and another under each armpit. It is not necessary to raise him entirely off the ground; his toes should be left touching, as it gives confidence to him, and if absolutely complete extension be needed, by flexing the knees very slightly the toes will, of course, leave the ground, or the jacket may be applied in the recumbent position by using Davy's hammock.

The vest is gently pulled downwards, and all wrinkles removed, and a pad placed inside it over the pit of the stomach. This is to be slipped out afterwards, its object being to leave room for distension of the abdomen after meals. Coarse muslin (crinoline muslin) bandages, thickly sprinkled over with dry Plaster of Paris, are to be rapidly immersed in warm water containing a little alum, slightly squeezed out and applied over the vest in layers, extending from about an inch below the iliac spines to the armpits. An assistant smoothes down each layer of bandage as it encircles the trunk, and from time to time applies with his hands some more plaster, made into a cream with water; or, if the bandage appears to have been too well moistened, he rubs over it a little dry plaster as the operation proceeds.

Small pads of wadding in thin patients may be placed over any bony prominences outside the vest before the application of the first bandage, which may be passed round the pelvis and brought obliquely upwards as it encircles the abdomen, fixing permanently in their position all woollen pads over the iliac spines or prominent vertebræ. After the application of the last bandage the assistant applies some fresh plaster, rubs it down with his hand, and finishes the jacket off, leaving a smooth and even surface. It sets in a few moments, and the patient may be taken down and laid flat upon a hard mattress before the fire for a short time before being carried to bed. By turning up the tails of the merino vest over the plaster, near the end of the operation, a more presentable finish off is obtained. The jacket may be cut up, punched with holes, and laced on again if found quite satisfactory.

Small children can be nursed in a Phelp's box or any extemporised flat wooden structure with shallow sides in which they can be carried about from room to room or out into the open air and sunshine.

Vaccine or inoculation treatment with minute doses of Tuberculin, regulated by repeated observations upon the opsonic index, is indicated as in all localised tuberculous affections.

Poroplastic Felt Jackets, ready-made, of various sizes and shapes, may be obtained from any instrument maker, and rapidly adjusted to the patient's body when suspended. The Felt Jacket is put into a steam oven, and in a few minutes it becomes quite soft and pliable, in which condition it is moulded to the chest and abdomen, fastened with buckles, and the setting process is complete in 5 to 10 minutes, during which time the suspension is to be kept up. It can, every 4 or 6 weeks, be reheated and applied again, as it yields a little with the heat of the patient's body. It has the great advantage of being easily taken off and put on, and allows of daily inspections if abscesses are feared.

When already some prominence of the spine has developed in the early stage, an attempt should be made to lessen it by carefully adjusting a firm cushion or sand-bag under the curve so that the weight of the upper and lower parts of the trunk may be utilised as a slowly extending force. The use of any form of extension apparatus should only be entrusted to an experienced surgeon, and the plan of forcibly straightening out the angularity under anæsthesia is reprehensible.

In caries involving the cervical vertebræ the neck must be rigidly supported; when the disease affects the first and second vertebræ a dislocation forwards of the atlas may speedily cause death. Sand-bags should be placed on each side of the head so as to effectually prevent all rotatory or lateral movements. In the presence of acute symptoms of threatening paralysis immobility must be further procured by attaching a band to the chin and occiput and passing the cord from this over a pulley at the head of the bed, a small weight being used as an extending force. Later on, a leather or poroplastic support may be moulded; seldom does the jury-mast apparatus prove of any use, but it may be employed in disease of the lower cervical region. In young subjects the best mechanical appliance for high cervical caries will be afforded by a double Thomas's splint, the upper extremity of which bears a concave occipital rest.

Paraplegia usually passes off when prolonged rest has been strictly carried out; when, however, the power seems to be steadily getting less, the operation of *laminectomy* may be undertaken. The pathology of tuberculous spondylitis must be always kept in mind; the symptoms of paralysis are very rarely caused by mechanical compression by the displaced segments of the spinal column, but by a low form of myelitis arising from the presence of tuberculous products inside the osseous canal. Hence

laminectomy (or removal of the diseased posterior arches) or transversectomy (removal of transverse processes) should be undertaken more with a view of clearing out the tuberculous detritus than of removing bone deformity. Where severe pain arises from pressure on the nerve roots the operation of *costo-transversectomy* may be demanded and a portion of the rib removed.

For the spastic condition which sometimes remains after recovering from the tuberculous process the new operation of resecting the posterior roots of the second, third and fifth lumbar nerves has given excellent results.

When suppuration occurs, the resulting spinal abscess should be opened under strict antiseptic precautions without waiting for the skin to be involved, the abscess cavity should be thoroughly scraped, flushed, and pressed empty, after which iodoform emulsion may be injected and the skin sutured without drainage being provided for, as in the treatment of carious bone described in the previous article. (See also Psoas Abscess.)

Where old sinuses have already become established an attempt may be made to heal these by the injection of Bismuth Jelly with or without previous curetting, and the removal of diseased laminae and spines, transverse processes, or necks of the carious ribs.

The treatment of retropharyngeal abscess will be found under Pharyngitis.

CATALEPSY.

This being nearly always part of the general hysterical condition, though occasionally it is the only manifestation of the disease present, its treatment is obviously identical with that of hysteria. If there be loss of consciousness associated with the muscular rigidity, the patient should be aroused by a good dash of cold water thrown suddenly over the head and face. Should this fail, a smart electric shock from a frictional machine, or what is much more convenient, a pretty severe induced current may be passed through the arms. It should be suddenly applied in full strength, and not turned on gradually. One pole may be applied to the upper part of the spine, and the other to the rigid limb. Gowers states that a pinch of snuff may soon restore consciousness, but the vapour of strong Ammonia or Acetic Acid is better, or Hare's plan of closing the mouth and nostrils for about 30 seconds, or the method of pouring a little water down the throat or nostrils so that some may get into the larynx and provoke coughing. Emetics often dispel all symptoms, but the patient is either unwilling or unable to swallow them, and it is best to administer $\frac{1}{10}$ gr. Apomorphine hypodermically. Cannabis Indica in small doses (2 to 5 mins. of the tincture) is credited with special virtues.

After the attack passes off, drachm doses of the Ammoniated Tincture of Valerian, with a little Asafetida, have a good moral influence. Should there be a very distinct series of attacks, the

removal of the patient from her surroundings and a good course of massage and forced feeding will prevent a return. In the presence of meningeal irritation, delusions, or other forms of insanity, the administration of severe electric shocks or cold douches must be avoided.

CATARACT.

The most commonly met with type of opacity of the lens is that known as senile cataract. It can only be remedied by operation, as no known agent exerts any influence in preventing the progressive blindness, though when the opacity is greatest in the nuclear part of the lens some improvement of vision may be maintained by keeping up dilatation of the pupil by the use of tinted glasses and Atropine, and should myopia have occurred from increase in the refractive power of the lens distant vision may be considerably improved by using weak concave glasses.

Methods of hastening the ripening of the cataract by tapping the anterior chamber and inducing changes in the epithelium of the anterior capsule whereby the aqueous humour may cause disintegration of the fibres of the lens are seldom resorted to ; the best practice is to wait till the ripening process has spontaneously advanced to such a degree as will justify operation.

The patient having been put into the most favourable condition of health by judicious dietary, &c., and a mild purge having cleared out the bowel, the operation is now usually performed under the local anæsthesia of a 2 per cent. Cocaine solution. Of the numerous operations in use the most satisfactory one for general purposes is the *combined* operation, which consists of a flap operation and an iridectomy, so-called in contradistinction to the *simple* operation, in which the lens is extracted without section of the iris. After the conjunctival sac has been thoroughly flushed by sterilised saline solution, an incision is made by entering the point of the cataract knife at the visible margin of the cornea through the anterior chamber, and after the exit of its point at the opposite corneal margin a semicircular flap is cut upwards, the curved portion being constituted by the margin of the transparent cornea. A portion of the iris is next removed with the view of preventing prolapse and subsequent incarceration of the iris in the corneal wound ; the capsule of the opaque lens is freely incised by the cystotome, after which by gentle pressure the lens is extracted. The wound is finally cleansed and a dressing consisting of a pad of dry lint adjusted evenly over the eye and secured by bandage ; the patient must be kept as quiet as possible after the operation, till healing has become established ; atropine should be instilled on each daily removal of the dressing ; he may be permitted to sit up on the third or fourth day, and bandages may be dispensed with at the end of a week from operation and dark glasses worn. Both eyes should be kept bandaged from the first.

In the *simple* operation the steps are the same, but the corneal flap is larger; there is no portion of the iris removed and the circular pupil resulting gives a better appearance. The iris must be watched, however, and if at the end of 24 hours it is found to have prolapsed the corneal wound must be opened up and an iridectomy performed.

The method of removing the residual cortical debris by fluid pressure was introduced by the late Dr. W. M'Keown under the name of *irrigation*. The fine nozzle of Cecil Shaw's improved irrigation apparatus being introduced into the corneal wound, a stream of sterilised saline solution is made to gently flush out the interior of the capsule, removing all cortical fragments without the usual assistance of manual pressure, the scoop or massage. The great advantage of the method lies in its applicability to the removal of unripe senile cataracts, which consequently can be operated on at an earlier stage than formerly. The method is much used in India, where, however, the favourite operation is extraction of the lens in its capsule—a practice seldom resorted to at home owing to the danger of loss of the vitreous.

Cataracts occurring before the age of 25 years, whether complete or lamellar, may be effectively dealt with by the operation of *needling* or *discission*. This consists in inserting a needle through the cornea and lacerating the anterior capsule of the lens so as to expose the lens fibres to the absorptive action of the aqueous humour after the instillation of atropine, care being taken that the iris is left untouched. Repetition of the operation is usually necessary and atropine must be daily instilled.

Linear extraction is employed for fluid or soft cataracts in subjects under 25 or 30 years of age and is suitable after the failure of discission. It is performed by making a short incision within the margin of the cornea by a triangular keratome, after which the capsule of the lens is incised by the cystotome; and, gentle pressure being applied, the softened lens is evacuated through the corneal wound. The iris is left untouched unless prolapse occurs, when an iridectomy may be necessary if this cannot be satisfactorily reduced.

Congenital cataract should be operated upon early—*i.e.*, before the end of the first year—especially when the opacity is complete, though often other serious ocular defects are also present. Needling is usually satisfactory when the cataract is fluid; in hard opacity the linear operation will be required and the capsule may require removal by forceps.

The lamellar cataracts occurring in young subjects may be treated by an iridectomy when the periphery of the lens is clear and the opacity is limited, otherwise needling must be resorted to, the iris being left intact; in either case often a considerable defect of vision may be usually anticipated.

In traumatic cataract as little operative interference as possible should be undertaken; atropine may be safely instilled only so

long as the tension in the injured eye is low. After the lapse of several months needling or linear extraction may be resorted to, but binocular vision must not be expected. When a foreign body in the lens complicates the condition the lens with the contained substance demands immediate extraction.

In all cataract operations for senile or other types only one eye should be operated upon at a time, and extraction should not be undertaken in the presence of conjunctivitis and of lachrymal tumour or mucocele and when the projection of light is indicative of deep-seated disease in the fundus, but the presence of glycosuria need not prohibit operative measures and sometimes albuminuric cases make a satisfactory though slow recovery.

CATARRH—see also Bronchitis.

An acute inflammation confined to the nasal membrane is recognised by the term "Catarrhal Rhinitis." Often, however, the affection is but the first stage of a laryngeal or bronchial attack, the inflammatory process extending downwards as in ordinary catarrhs or "colds."

Prophylactic treatment may be directed to the prevention of attacks in those subject to them by the use of Anticatarrrhal vaccines prepared from the Friedländer bacillus or of the Wimpole Institute "Combined vaccine for colds," immunity being securable for six months after the injection of a tube containing the requisite dose—125 to 500 million organisms.

Any cause of the susceptibility should be sought out and removed; thus adenoids, hypertrophied tubinates, polypi, deviation of the septum, or pharyngeal tonsils, &c., may be the chief factors, and their treatment may entirely remove the tendency towards recurrence of acute attacks of catarrh.

Coddling, by wearing too heavy clothing and living in heated rooms owing to the dread of draughts, is a fertile source of attacks and can only be remedied by an education in the principles of open-air living and general hygiene. When an attack has already occurred undoubtedly the only reliable method of causing its speedy abortion is the injection of a full dose of the combined vaccine previously mentioned. This vaccine has recently been also given by the mouth with success. A hot bath followed by a full dose of Morphia at bedtime is a favourite remedy with some and Benzoate of Soda in one dose of 45 grs. is often efficacious. A popular method of treatment is to give teaspoonful doses of the Ammoniated Tincture of Quinine, and the equivalent of this dose can be procured in the capsular or tabular form combined with Camphor and Atropine with a little Morphia. A local spray of Carbolie Acid is sometimes efficacious at this early stage.

When the aqueous or mucous discharge has already appeared the latter-mentioned abortive remedies should not be employed, the best treatment at this stage being that indicated at the begin-

ning of an attack of acute bronchitis. After a hot bath the patient should go to his bed and perspiration should be encouraged with a smart diaphoretic like Sweet Spirit of Nitre in $\frac{1}{2}$ dr. doses with double this amount of Mindererus Spirit and not more than 3 mins. of Liquor Morphia administered every three hours. By these means the catarrh may often be prevented from extending downwards to the larynx and bronchi.

Local applications for the relief of sneezing and other symptoms of irritation may be demanded. The most efficacious of these is an inhalation of the vapour of very hot water to which a little Carbolic Acid, Hemlock Juice, or Tr. Benzoin. Co. has been added. Ordinary inhalers are of little use; a large basin of almost boiling water should be placed under the patient's head and a sheet thrown loosely over him; the air becomes rapidly saturated by the vapour. Dry heated air is always irritating and the sick-room atmosphere should be kept saturated with moisture.

When the attack is not so severe as to cause the patient's confinement to his room Ferrier's Snuff, consisting of Morphine Hydrochloride 1 gr., Powdered Gum Acacia 1 dr., and Oxynitrate of Bismuth 3 drs., may be insufflated frequently. Cocaine usually gives speedy but dearly purchased relief, as the irritation returns in an aggravated form. The best local anæsthetic is Menthol; this may be added with advantage to Ferrier's Snuff (5-10 grs. per oz.). A spray for use in the atomiser consisting of 1 per cent. Menthol in pure liquid Paraffin to which a little Camphor is added makes a valuable local soothing application. Plugs of cotton-wool saturated with a 5 per cent. ointment of Menthol in lanolin may be inserted up each nostril or the ointment can be smeared over the nasal membrane by the finger tips. Relief is often afforded by frequently sniffing the vapour of Eucalyptus Oil from a small phial warmed by the heat of the hand.

In chronic nasal catarrh the best routine treatment is the Ammonium Chloride Inhaler; the posterior nares may be washed out frequently by a 1 per cent. solution of Ammonium Chloride which is sniffed up from the palm of the hand. Half a teaspoonful of the following powder dissolved in a tumblerful of warm water may be used in a similar manner several times a day: Sodii Bibor., Sodii Bicarb., Sodii Chloridi, ana ʒss . Where the discharge continues, though no obvious local cause can be detected, a cautious cauterisation of the posterior wall often arrests the inflammatory process.

CATHETER FEVER—see Urethral Fever.

CEREBRO-SPINAL FEVER—see Meningitis, Cerebro-Spinal.

CHANCRE—For Hard Chancre see under Syphilis.

SOFT CHANCRE.—The treatment of this affection has been already dealt with incidentally on p. 123 in the description of the methods of treating the bubo which commonly accompanies the soft sore.

The best routine treatment is to first destroy the surface of the sore with a strong caustic, the most manageable being strong Carbolic Acid, Pernitrate of Mercury Solution or Nitric Acid applied on a little cotton-wool twisted round a piece of match-wood. In this way any infecting organisms which have not buried themselves deeply are effectually destroyed. After thorough cleansing and drying, the ulcer is sprinkled over with Iodoform and covered with gauze or lint, which should be changed at least twice a day.

The great drawback to Iodoform is its tell-tale odour ; as a rule far more is applied than is necessary, and with neatness in dusting, when the patient has a long prepuce, its odour need not be diffused, but when the sore is outside the prepuce the drug may be mixed with Tonquin bean or coumarin (1 gr. to 1 dr.) to disguise the odour. Aristol, Dermatol, Iodol, Europhen, Orthoform, Xeroform, Antifebrin, or Di-Iodoform may be used when odourless preparations are indicated. Canazzani treats all soft sores by applying a mixture of 5 drs. Chloral Hydrate, 3 drs. Camphor, and 3 oz. Glycerin. Where there is much swelling or pain about the prepuce cooling lotions may be used. Wielander keeps the sores covered by lint maintained at a temperature of 41° C. to destroy the virulence of the secretion, but flushing with Hydrogen Peroxide answers all purposes better.

Circumcision is often necessary where the prepuce is tight, and this must not be delayed if any signs of sloughing should appear, caustics being applied freely after the operation. For the phagedænic sore the best remedy is strong Nitric Acid. (See also under Bubo.)

CHAPPED HANDS.

This affection can usually be prevented by protecting the skin from sudden variations of temperature and especially by guarding against the practice of washing the hands in very hot or very cold water, and then drying them by the heat of the fire after an imperfect use of the towel. A superfatted soap should always be employed. The following ointment employed after light washing usually renders the skin smooth and healthy. It should be rubbed in freely at night and chamois gloves worn afterwards :

R. *Liquor. Carb. Deterg.* ʒiiss.
 Hydrarg. Ammon. Chlor. gr. xxv.
 Lanolin. ʒij. *Misce.*

Fiat Unguentum.

Other good applications are—Glycerin, Glycerin and Rose Water (1 to 5), Glycerin and Friar's Balsam (4 to 1), Glycerin and Eau de Cologne (2 to 1), Glycerin of Starch, Glycerin and diluted Lead Solution (1 to 8), Glycerin and Hydrastis (Gly-

cerin 3 ; Hydrastis Tincture, 1 ; Rose Water, 10) ; Boracic Ointment, Vaseline, Cold Cream, or Vinolia Cream are generally successful preventives when used after washing.

CHICKEN-POX—see *Varicella*.

CHILBLAIN.

The preventive treatment is similar to that of chapped hands ; continual washing with very hot or very cold water and exposing the imperfectly dried hands to the heat of the fire is answerable for many attacks, as is also exposure to cold winds followed by injurious warming methods. Vigorous open-air exercise, even in coldest weather, during which the hands should be protected by loosely fitting thin woollen gloves, is imperative. When the feet are attacked, woollen stockings and roomy boots with cork insoles should be worn ; night-socks may be used in bed after vigorous towelling, but hot-water bottles must be condemned.

Constitutional treatment (Iron and Quinine, &c.) is usually necessary, especially when anæmia is present, and in many chronically susceptible patients there appears to be a well-defined diathesis as pointed out by Wright, in which constant headaches, chilblains, an erythematous state of the general cutaneous surface and slight œdema of the legs are present. This condition can only be relieved by increasing the coagulable power of the blood by administering Chloride of Calcium (15-gr. doses) for short courses, a practice which the writer has many times found to give most unmistakably good results. Ichthyol internally has many advocates.

When the chilblain has already appeared, local treatment in the early erythematous stage may effectually prevent ulceration, by restoring the tone of the vessels through vigorous friction and the use of any stimulating application as the following :—

℞. *Tr. Capsici* ʒj.
 Tr. Cannab. Ind. ʒj.
 Olei Cajuputi ʒj.
 Spirit. Camphoræ ad ʒij. *Misce.*

Fiat Linimentum.

Lin. Camph. Co. is a good application, as is also the following :—
 Lin. Saponis, ʒiij. ; Chloroformi, ʒj. ; Lin. Belladonnæ, ʒiv. ; *misce.*

Excellent results have recently been reported by Mansel Symson from the bathing of the affected parts in 10 vol. Peroxide of Hydrogen Solution diluted with an equal quantity of hot water for 15 to 20 minutes twice daily.

Iodine Liniment freely painted over the parts often acts well, and when severe pain and tingling are complained of Belladonna Liniment, Menthol, Oil of Peppermint, or of Eucalyptus, may be

employed, but these agents should not be applied when the skin is broken.

Electricity in every form has its advocates, the X rays and also high-frequency currents have proved a valuable means of improving the tone of the cutaneous vessels. Flexile Collodion painted over the erythematous skin often acts well and a 20 per cent. Formalin Ointment applied at night acts as a local tonic.

When the surface of skin over the chilblain has broken, the resulting sore or ulcer must be treated upon general surgical principles, the main fact being kept in mind that as the local vascular condition has its tone reduced stimulating ointments are indicated. One of the best routine applications is the following :

R. *Tr. Benzoin. Co.* ʒij.
 Lanolin. ʒiv.
 Ungt. Zinci Ox. ʒj. *Misce.*

Balsam Peru may be substituted for the Friar's Balsam in the above : Ichthyol 1 part and Lanolin 4 parts make an excellent ointment. For very sluggish sores there is nothing better than Basilicon (*Ungt. Resinæ*), to which a few grains of Camphor to each oz. may be added. Should healing still remain slow, 5 grs. per oz. solution of Chloral Hydrate should be tried. Caustics are to be avoided, especially *Argent. Nit.*, which is very painful, but occasionally flabby granulations may be lightly touched with a smooth crystal of Copper Sulphate. The ointments used in the ulcerating stage should be of firm consistence and should be applied thickly spread upon lint and blebs snipped as they form, so as to bring the unguent into direct contact with the ulcerated surface.

CHLOASMA.

The pigmented patches often seen on the upper part of the face of pregnant women and those suffering from uterine or ovarian troubles, which constitute the affection known as *chloasma uterinum*, usually disappear when the primary condition is removed and the skin is treated by Perchloride of Mercury or Permanganate solution, as in case of freckles. The allied affection known as Freckles or *Ephelides* caused by the deposition of pigment in the cells of the rete usually in the exposed parts of the skin may be dealt with in various ways by agents which destroy the film of epidermis. Hebra's method was to apply a lint compress for four hours, soaked in Solution of Perchloride of Mercury (1 in 100), letting out the blister formed, and dressing the resulting raw surface with powdered Starch ; or 8 grs. of the Mercurial Salt may be dissolved in 8 oz. of Almond Emulsion, and sponged over the spot several times daily till desquamation occurs. This plan obviously cannot be resorted to when the patches are extensive. Unna applies a plaster made with Hydrarg. Ammon. Chlor.

for 12 hours, and dresses afterwards with an ointment of Bismuth (1 dr. to 1 oz.) ; sometimes his method of effecting exfoliation of the epidermis by applying an ointment of Resorcin 1 in 10 for a few hours at a time is very convenient. Tincture of Iodine, Carbolic Acid, Sulphurous Acid, Peroxide of Hydrogen, Acetic Acid, and many other mild counter-irritants are also successful. Crocker uses an ointment of 10 to 20 grs. of Veratrine to 1 oz. Lard. Pringle uses Salicylic Acid either as a paste, plaster, or muslin, or saturated alcoholic solution.

A rapid and efficacious method of dealing with large patches is to apply a strong solution of Pot. Permang. and wash off the discoloration by solution of Oxalic Acid as practised for sterilisation of the hands before abdominal operations. Preventive measures will obviously lie in the use of tinted veils to intercept the direct rays of the sun.

CHLOROFORM NARCOSIS AND CHLOROFORM POISONING— see under Poisoning by Chloroform.

CHLOROSIS.

Under Anæmia and Amenorrhœa the treatment of this condition has been referred to ; it consists mainly in the exhibition of remedies containing iron. Blaud's Pills, 2 four times daily ; 30 to 60 mins. of Dialysed Iron ; or 3-gr. doses of Reduced Iron are the best preparations. The dose of the metal, in whatever preparation selected, should be large and often repeated. Failure in treatment is owing to the too early cessation of Iron administration and too small dosage. Allbutt rightly insists that the metal must be given continuously for at least three months ; his method is to give 1 gr. Sulphate three times a day for the first week, 2 grs. in the second, and 3 grs. in the third week ; 9 grs. being taken daily for two months, after which the dose is gradually lessened.

It may now and then be found that the results of Iron soon cease after stopping its administration, and it will be well to leave off for a period, in which Arsenic may be given, or Iron and Arsenic may be given together. In these cases the nature of the food-supply should be carefully investigated ; it will often be found that the patient is living upon a dietary poor in iron, such as rice, potatoes and milk, fish or veal. Undercooked red meat with spinach or fresh peas and lettuce should be freely administered and the condition of the teeth carefully seen to. In some instances it will be found that the patient is intentionally keeping up the condition by imbibing vinegar with the view of producing pallor or she may be daily resorting to large doses of antipyrine or other analgesic to relieve headache, or there may be unsuspected melæna from a duodenal or gastric ulcer. In all intractable cases absolute rest in bed for a few weeks is essential, but a free open-air life should be a routine in ordinary examples of the diseased condition.

Organic salts of Iron and enemata of defibrinated blood of oxen have been advocated, but the common experience is that it is not the nature of the preparation, but the amount of the metal introduced into the blood, which is the potent factor in treatment.

Sir Andrew Clarke insisted upon the necessity of giving purgatives, and gave $\frac{1}{4}$ th part of the following twice a day :—Ferri Sulph., 24 grs. ; Mag. Sulph., 6 drs. ; Ac. Sulph. Arom., 1 dr. ; Tinct. Zingib., 2 drs. ; Inf. Gent. Co. ad 8 oz.

The auto-intoxication theory of chlorosis has led to the advocacy of purgatives and intestinal disinfectants, and the discovery that the mass of the blood is increased has led some physicians to advocate purgatives. The universal experience is that the routine use of disinfectants is unnecessary and continual purgation decidedly injurious. Iron alone meets all the demands of the condition as far as drugs are concerned. The questions of food, exercise, change of scene, environment, oral sepsis, &c., are all discussed under Amenorrhœa and Anæmia, where various formulæ are given. When the condition of the gastric membrane resents Iron, the writer gives reduced Iron and Arseniate of Iron in a Keratin-coated pill (Ferri Redact. gr. ii, Ferri Arsen. gr. $\frac{1}{8}$). Pepsin may be indicated and peptonised foods are often beneficial. Often resort to a chalybeate spring is efficacious and some patients with feeble digestive powers can take the Iron in such waters as Schualbach in Nassau and Spa in Belgium when ordinary ferruginous preparations are badly tolerated at home.

CHOLERA ASIATICA.

Prophylaxis is of vital importance ; in epidemics the purity of the drinking water must be assured. Fortunately, boiling and filtration afford perfect protection as regards this source of infection ; the addition of even large amounts of alcoholic liquors is useless without heat. All foods and drinks should be quite recently cooked or boiled ; fruits must be most sparingly used, and only those in best condition eaten. Water for cleansing purposes should be boiled. Rigid isolation of those suffering from the disease, and disinfection of their apartments, linen, and clothing, and free bathing in weak disinfectant solutions are necessary. The excretions from the body should be destroyed instantly, and the greatest personal cleanliness in every respect insisted upon ; every possible method should be employed to prevent the pollution of the water-supply in wells and reservoirs, and in India excellent results have been obtained by the routine practice of adding Permanganate of Potash to the water in the wells. Everything that lowers the vitality of the healthy, as over-work, fashionable dissipation, irregular meals, &c., is to be guarded against.

Diarrhœa, constipation and indigestion are to be met by appropriate agents without delay in cholera times. The use of

astringents like Catechu, Kino, Tannin, &c., in combination with Laudanum or Chlorodyne is universally approved of for the preliminary diarrhoea, but such agents are useless when the disease has already set in.

Prophylactic inoculation of cultures of the spirillum causing the disease has been successfully employed by Haffkine during epidemics. The usual method is to inject a dose of an attenuated culture which should be followed in 5 days by a dose of the germs intensified by being grown in the peritoneal cavity of the guinea-pig. The protection from the vaccine usually lasts for about a year, but recently he advocates the plan of at once resorting to the injection of pure culture in the presence of an active epidemic. In the Philippines Strong states that the incidence of the disease amongst the inoculated was only one-sixth of that found in persons not previously treated by the vaccine. Kolle's vaccine consists of a standardised emulsion of the killed germs preserved in weak carbolic solution and consequently possesses advantages over Haffkine's, which must be freshly prepared. Serum therapy has hitherto failed in providing a protective or curative serum for cholera. The treatment of the established disease remains still in an unsatisfactory state, and whilst certain general principles are applicable, in most instances the treatment must be entirely symptomatic.

The usual intestinal antiseptics have proved futile, the only one worth trial being Calomel when given early, and it is probable that in those cases where the drug has proved valuable its good effects were due to its purgative action in clearing out of the alimentary canal the germs and their products as Castor Oil and Salines do when administered at the beginning of the attack. Rogers has brought important statistics forward which prove the value of Permanganate of Potassium by the mouth ; he gives a 2-gr. keratin-coated pill every 15 to 30 minutes till the stools become green ; by this treatment in combination with intravenous hypertonic injections uræmia is prevented and the mortality has been reduced to nearly one-third its former rate.

The best routine method is to wash out the bowel by a copious enema of a warm solution of Tannin (1 in 80), and Catani maintained that by a careful manipulation the liquid could be made to pass into the small intestine and so flush out the intestinal tract from the stomach to the anus.

The same flushing principle is more effectually applied by administering a full dose of morphia hypodermically which relieves vomiting, cramps, &c., and permits the patient to swallow and retain a large quantity of water if administered in small amount at a time at brief intervals. Saline Solution is employed with great advantage in the collapse stage and the mortality has certainly been considerably reduced by it. Owing to the condition of the bowel it is of little use attempting to introduce the solution by the rectum, and even the hypodermic or sub-

cutaneous method must be laid aside for the intravenous one. There is a difference in practice as regards the strength of the saline ; most authorities recommend the so-called normal, physiological or isotonic solution of .9 per cent., whilst O'Meara employs a .625 per cent. saline and insists upon its very slow injection till the normal S.G. of the blood is reached. The density of the saline is said not to be a material point since the mortality seems to have been reduced equally by the use of the different strengths of the solutions when these are injected at about 105° F. Rogers, however, now maintains that the hypertonic intravenous injections have very considerably reduced the mortality. His fluid is made by dissolving 120 grs. Sodium Chloride and 4 grs. Calcium Chloride and 6 grs. Potassium Chloride in 20 oz. water. Under the action of the saline the pulse returns in the radial, the urine begins to flow and all the symptoms improve ; opium and calomel must not be given at this stage and any food, antiseptic or astringent drug if swallowed is either rejected or remains unabsorbed in the intestines. The hot saline injection usually renders the hot baths or hot packs unnecessary, but when the algid condition is very marked they may be also used.

In the reaction stage little should be done in the administration of drugs, the patient being left to nature's method of resolution which requires absolute repose, a little iced milk or meat juice being occasionally given. When the typhoid supervenes upon the algid or collapse stage the symptoms must be met by the administration of drugs, sponging and saline injections or diuretics upon recognised principles indicated in the treatment of typhoid or other long-continued fever.

Thus the disease may be best treated throughout the entire attack by small quantities of liquid administered by the mouth at short intervals, one preliminary dose (5 grs.) Calomel, one or more hypodermic doses of Morphia and the intravenous injections of Normal Saline Solution, and should cardiac failure threaten, Strychnine hypodermically and Oxygen inhalation when respiration becomes difficult. Vomiting and hiccough may sometimes be relieved by minute doses of Cocaine.

CHOLERA INFANTUM—see *Diarrhœa*.

CHOREA.

The treatment of any disease whose pathology remains unsettled must necessarily be largely empiric. If the researches of Poynton and Paine be accepted the ideal treatment would be that of acute rheumatism.

Only three or four of the host of remedies recommended from time to time for the treatment of chorea are of real value. A disease so liable to get well in many cases if left to itself is certain to have scores of specifics, and whatever drug the observer had chanced to give, he is liable to attribute the spontaneous cure to

its influence. Whilst many cases of chorea will recover if left alone without any medicine whatever, it is equally certain that many will go on from bad to worse if not treated. It is also certain that we have drugs which, if judiciously administered, possess the power of arresting the disease.

In many cases rest in bed, suitable clothing, ventilation, tepid sponging, good food and abundance of it carefully administered, will go a great way to effect recovery. Absolute rest in bed and freedom from all excitement is essential in bad cases.

The condition is often associated with anæmia, and when this is remedied the chorea passes off. It will be wise, when a mild case comes before the physician for the first time, at the very commencement of the symptoms to attend to rest and feeding, and abstain from very active drugging. A small quantity of Tincture of Iron, with Cod-Liver Oil, cannot fail to improve the general health when associated with a few mild doses of a saline purgative. If the movements, however, have lasted for any time—a week or more—the patient should at once be placed upon a course of Arsenic.

The writer is satisfied that this drug is the best routine remedy for the disease, and he is convinced from large experience in a children's hospital that when failures result these may be accepted as a general rule as caused by improper dosage, the error being nearly always made of prescribing arsenic in too minute amounts. The ordinary rules for appropriating dosage according to age should be discarded in the case of the treatment of chorea by arsenic, since choreic children bear larger doses of this drug than would, at first sight, seem possible. These large doses are also necessary to produce an effect upon the disease. In the ordinary doses, say of 1 min. of Fowler's Solution for a child 3 or 4 years old, or of 2 to 3 mins. for a child of 6 or 7, Arsenic probably produces little or no benefit, and the writer has seen several cases where the drug was said to have failed which have rapidly improved when the proper dose was administered. Something very like this was seen in the treatment of anæmia and chlorosis with small doses of Iron. It is a well-established fact that these affections may be for a long time treated by ordinary doses of some iron preparation without any appreciable benefit, but almost immediately improvement is noticed after the administration of large doses—doses much larger than can possibly be assimilated. The same fact is constantly observed in the treatment of tertiary syphilis by iodides. Seguin gives up to 25 or 27 drops of Liquor Arsenicalis after each meal in a large tumblerful of Alkaline Water in divided drinks during the hour following the meals, but such colossal dosage is seldom required. Gordon Sharp's dosage more nearly reaches the limits of safety; he begins with 10 mins. thrice daily for children between 8 and 15 years and increases the dose to 12½ mins. after the end of a week if improvement is not manifest. Where the stomach is irritable the drug may be given

hypodermically. Rarely have any evils been recorded, but the physician should be on the watch for pigmentation and signs of neuritis.

Fowler's Solution for a child of 7 years old may be commenced in doses of 3 mins. three times a day, and the dose may in a week be brought up to 10 mins. thrice daily without producing any untoward symptoms, and this dose can be taken for many weeks. Iron may be combined with it, but not in doses proportionately large, and it should always be given after a full meal. The following is a good working formula :

R. *Liq. Arsenicalis* (Fowler) ʒiiss.
 Tincturæ Ferri Perchlor. ʒij.
 Glycerini Purificati ʒj.
 Aquæ Chloroformi ad ʒiv. *Misce.*

Fiat. mist. Capiat ʒj. *ter in die ex aqua post cib.*

Should improvement be very slow, the Arsenic may be pushed till griping and indigestion, or signs of irritation of the conjunctiva or nasal mucous membrane, show themselves.

The new organic Arsenic compounds—Arsamin, Atoxyl or Soamin ; Cacodylates ; Arrhenal or New Cacodyle, &c., have been vaunted, but the physician will be wise who refuses to employ these compounds in full doses, since optic atrophy and other forms of peripheral neuritis may supervene without warning. All that Arsenic can accomplish may be more safely obtained by gradually increasing the dose of the official liquor, but where the stomach cannot be made to retain this preparation Cacodylate of Soda may be given hypodermically in moderate doses. Several cures have been reported where "606" (Salvarsan) had been injected.

Since the publication of Poynton and Paine's discovery of the *Micrococcus rheumaticus* in the brain cortex of choreic subjects Salicylate of Sodium has been extensively tried, but the results have been unsatisfactory save in those cases where the disease has made its appearance during an attack of acute rheumatism. In mild cases it may be used as a routine since it is very desirable to have a non-toxic agent which may be freely prescribed in the extern departments of hospitals for children whose mild symptoms do not warrant detention in the wards, and there is always in prescribing concentrated arsenical mixtures for the children of the poor the danger of a large overdose being swallowed by mistake. Aspirin has, however, given better results than the salicylates and may be dispensed in powder form with sugar.

In the acute chorea complicating rheumatic fever, arsenic should only be commenced after the febrile disturbances have been subdued by free doses of the salicylate. In all cases of very severe chorea where the movements are such as seriously to interfere

with feeding and sleep, their violence must be alleviated by agents which have a quicker influence over the disease than that possessed by arsenic. The best routine under such circumstances is a combination of Bromides with Chloral Hydrate, 1 gr. of Chloral for each year of the child's life (up to 8 years old) may be given every 4 hours with $1\frac{1}{2}$ grs. bromide till drowsiness supervenes, the child being kept at rest in a carefully padded cot and nursed by a skilled attendant who should administer small quantities of concentrated liquid nutriment at short intervals during the waking hours and who should specially guard against the possibility of bedsores. Harley's remedy consisted in such cases of the administration of large doses of Hemlock Juice till the physiological action of the drug became apparent ; thus Ringer has pushed the drug in the case of a child till 7 drs. were given every hour. The Hot-pack is very valuable and often induces sleep. Several authorities recommend that in intractable cases the Chloral should be pushed till deep sleep is induced and Bastian has carried this treatment so far as to keep the patient asleep for several weeks except at half-hour intervals for feeding. Lichtschein has given 120 grs. daily to a girl of 12 years for 3 weeks, keeping up a continuous state of somnolency.

Monobromide of Camphor is extolled by Baccelli, who commenced with 5 grs. *ter die*, increasing to double the amount when necessary, and this drug may be employed as a routine method in milder cases.

In these gravely acute cases chloral hydrate may be combined with other drugs and the following combination may be given to a six-year-old child :

R. *Chloral Hydratis* gr. cl.
 Sodii Bromidi $\bar{\text{z}}$ iv.
 Succi Conii $\bar{\text{z}}$ ij.
 Aquæ et Syrupi ad $\bar{\text{z}}$ vj. *Misce.*

Fiat mistura. Capt. $\bar{\text{z}}$ ij. quartis horis.

Morphine should seldom be resorted to, but excellent results are sometimes obtained by the hypodermic use of Hyoscine Hydrobromide in doses of $\frac{1}{200}$ gr. in grave cases. In a few cases Cannabis Indica has given rest, more frequently it is useless.

Chloroform or Ether inhalation is indicated when the movements do not cease during natural sleep or that induced by hypnotics.

Eserine, Curara, Picrotoxin, Lobelia, Tartar Emetic, and other powerful antispasmodic drugs have fallen into disuse since their action cannot safely be kept up save for very brief periods.

The spinal ice-bag or a spray of Ether or Methyl Chloride along the spine has sometimes aided in controlling the movements

and inducing sleep. High-frequency currents and other forms of electrical treatment have not given encouraging results.

The newer hypnotics—Chloralamide, Sulphonal, Trional and Veronal—are inferior to the bromide and chloral hydrate combination. Antipyrine has often been useful and some authorities push the drug till 100 grs. have been given daily—a practice open to serious objection.

Restraint by bandaging the upper limbs to the trunk and the leg to its fellow very seldom can be tolerated, but it may be tried, and if well borne may be persisted in; the bony prominences should be protected by cotton-wool.

In the grave form of chorea occurring during pregnancy absolute rest in bed and the avoidance of all excitement must be insisted upon. The best results are obtainable from full doses of Chloral Hydrate (30 grs.) combined with 60-gr. doses of Sodium Bromide. Abortion should not be induced unless as a last resource; overfeeding or even forced feeding may have to be resorted to.

As a rule a course of Arsenic is indicated in all severe cases of chorea after the violence of the movements has been controlled by sedatives.

Alternating with the arsenic treatment, or taking its place when for any reason arsenic cannot be tolerated, Zinc salts have been advocated. 3 to 5 grs. Sulphate or Oxide may be given thrice daily after food to children of 5 to 8 years old. The Phosphide ($\frac{1}{20}$ gr.), Valerianate ($\frac{1}{2}$ gr.) and Bromide ($\frac{1}{2}$ gr.) may be employed. Silver, Gold and Copper salts have also been advocated. Little can be said for Wood's Quinine treatment and Strychnine (Trousseau's remedy) has fallen into disuse, though the latter drug may be employed with advantage in the grave forms of the disease when heart failure threatens, and it may be given with Chloral Hydrate in order to counteract the depressing influence of the latter drug on the cardiac muscle.

During convalescence, generous feeding to the fullest extent compatible with the digestive powers, an open-air life and abstinence from all school lessons and excitement of every kind and a change to a bracing seaside resort are all most desirable or necessary. Where weakness of the muscles or local wasting supervenes, a course of massage and Swedish movements is clearly indicated, but electricity, if employed, must be in the form of the mildest constant currents, else the movements are apt to return through the excitement produced by painful shocks. In some chronic cases where through habit or the loss of co-ordinating power some purposeless movements continue the child must be daily taught to use the affected muscles, as in the treatment of ataxia, by graduated exercises short of inducing fatigue. Every source of reflex irritation should be carefully sought for in such patients, adenoids, errors of refraction, round-worms and dental caries being removed by suitable treatment. Frights must be sedulously guarded against.

In the hopeless form of congenital or Huntington's chorea, drugs are of no avail in combating the fatal issue, though occasionally some relief may be obtained by the administration of Hyoscine. In senile chorea first appearing after the age of 50 where there is no mental deterioration or hereditary history occasionally Arsenic has been found efficacious.

CHOROIDITIS.

Inflammation of the choroid is often of syphilitic origin, and yields to active Mercurial treatment; if got at an early stage, mercurial inunctions are especially indicated, and should be continued for a considerable period. In acute cases occurring late in syphilis, large doses of Iodide of Potassium may be tried first. In acute, or subacute cases, where sight has recently been failing from areolar or diffused choroiditis, where no history of syphilis is obtained, and where the kidneys are sound, the hope lies in small doses of the Perchloride of Mercury ($\frac{1}{15}$ gr. four times a day), commenced after a brisk saline purgative.

Subconjunctival injections of 1 c.c. of a 2 per cent. solution of Chloride of Sodium should always be resorted to in combination with constitutional remedies, and some ophthalmic surgeons report most favourably of the Cyanide of Mercury 1 in 5,000 injected every second or third day under the conjunctiva, especially in those cases where chorioido-retinitis is present. The pain of the injection is prevented by the addition of a little Acon.

Leeching of the temples, followed by the application of a small cupping-glass, or preferably by the use of Heurteloup's Leech, often affords relief. Absolute rest to the eyes must be insisted upon and dark glasses worn. Pilocarpine hypodermically, in doses of $\frac{1}{6}$ to $\frac{1}{4}$ gr., is the best remedy where recently effused products have to be dealt with.

For the chronic disseminated choroiditis, chiefly observed in children, the offspring of syphilitic parents, little or nothing can be done, unless there chance to be some recent or active inflammation going on. Generally the defect in vision is only noticed long after the active stage is passed, and when the period has expired during which the treatment would be of any use. The necessity of treating every departure from the normal standard of health in such subjects need hardly be referred to.

For the acute purulent form of choroiditis following injuries little can be done save for the relief of pain by warm fomentations and anodynes; when these fail a free incision of the globe and irrigation by weak sublimate solution should be resorted to as enucleation of the eye is liable to be followed by meningeal infection.

CHROMIDROSIS.

This rare condition in which the sweat or sebaceous secretion is coloured occurs in neurotic women and is supposed to be due to the absorption of some derivative of indol from the bowel in

constipation. The obvious treatment lies in free purgation and the most thorough cleansing of the skin by Permanganate baths and the antiseptic agents mentioned under Bromidrosis. The hysterical condition or menstrual disorder which may underlie should at the same time receive attention. The yellow discoloration of the sweat which sometimes follows ingestion of rhubarb and other drugs and the green discoloration observed in coppersmiths disappear after the removal of the cause. The white powdery residue left on the skin after crystallisation of urea sometimes met with in cholera and chronic Bright's disease is a clear indication for eliminatory treatment by the bowel.

CHYLURIA.

This is nearly always due to the presence of filariæ which live in the lymphatics of the trunk and extremities ; these block the thoracic duct and the lower lymphatic vessels in the urinary tract become varicose and finally rupture from time to time, causing the appearance of chyle in the urine. No known drug has any lethal effect upon the parasites in the body. The only treatment available is to keep the patient at absolute rest in bed with the pelvis well raised to diminish the pressure upon the dilated and ruptured lymphatic vessel and hasten its closure. The food should be free from fats and albuminoids ; as soon as the chyluria disappears a tumblerful of milk may be administered with the view of testing the patency of the leak, should fatty matter be absent in the next urine passed the patient may be allowed to move about.

Gallic Acid, Thymol, Rhizophora Racemosa, Benzoate of Soda, Iron, Iodides, Arsenic compounds, &c., have all been extolled but are of no practical value.

Chylocele should be treated like hydrocele, and when the dilated or varicose condition of the lymphatic vessels is confined to the scrotum it may be practicable to excise the entire mass. The operation of lymphangioplasty may be tried in some cases, and when elephantiasis follows the limb must be dealt with by the methods described in the article on Elephantiasis.

CLAVICLE, Fractures of.

Owing to the anatomical conditions splints cannot be applied as in cases of fracture of the other long bones of the skeleton.

The deformity or displacement in fractures of the shaft is mainly if not entirely due to the depression of the shoulder which causes the outer fragment to be drawn downwards, forwards and inwards by the weight of the arm, whilst the inner fragment is held in its position by the rhomboid ligament or at the most but slightly if at all elevated by the action of the sterno-mastoid muscle.

By placing the patient upon his back on a firm hair mattress with a small cushion between the shoulders and the arm supported upon a pillow by the side with the elbow elevated the fragments are at once brought into apposition. If this position be

maintained continuously for about 18 days no other treatment is required, but even when sand-bags are employed some occasional movement of the body will produce slight over-riding of the fragments with consequent pain and uneasiness. Hence further support is necessary, especially in patients who refuse to consign themselves for so long a period to the recumbent posture.

To shorten the sojourn in bed in the horizontal position various devices are resorted to. Hood's plan of strapping is the simplest, but no method of treatment which allows the patient to move about will give a result free from some deformity save the application of Gordon's original clavicular apparatus, which proved, however, so cumbrous as to be now almost discarded.

Three pieces of stout adhesive rubber plaster each about one and a half to two inches wide are vertically applied to the chest at a level below the angle of the scapula behind and brought over the clavicle in front to be attached as low down as the level of the nipple; the middle strip should be applied first and should cover the site of the fracture, being strengthened on each side by the overlapping edges of the lateral strips. After the application of these the patient should be placed in bed in the position above described and daily gentle friction or massage applied to the muscles. Passive movements at the joints of the fingers, wrist, elbow and shoulder should be commenced, and after a few days active gentle movements at all these joints, the shoulder-joint being cautiously exercised by a slight swinging motion.

In a week or eight days the patient may be permitted to get up and move about with his arm supported in a sling.

Sayre's plaster method is devised with the view of permitting the patient to move about from the start, but no pad should be placed in the axilla. Three long strips of stout rubber plaster each measuring $3\frac{1}{2}$ inches in width are required. One is stitched with the adhesive surface outwards so as to form a loop for the arm at the insertion of the deltoid, when this strap is in position traction is forcibly made on it to draw the arm backwards and the strapping is applied to the back of the chest and brought round the side beneath the opposite axilla and over the front of the chest till its free extremity is stitched to the part opposite the spine. A second long strip is taken and a slit made in its centre for the reception of the olecranon; this is attached at one extremity over the point of the sound shoulder and applied behind obliquely downwards, securing the elbow on the injured side as in a sling and its free end is turned upwards on the back of the flexed forearm and hand to join its upper extremity to which it is to be stitched above the sound shoulder. Whilst this second piece of plaster is being made to envelop the elbow the latter should be drawn or pushed forwards so as to force the shoulder backwards and upwards upon the fulcrum supplied by the loop of the first strip. The third strip of plaster is used to strengthen

or support the first and second, being applied round the chest and embracing the thorax, arm and forearm.

Duncan's modification of Sayre's plaster method consists in substituting a broad domette bandage for adhesive strapping, the bandage being applied in one piece and at the overlapping places fastened with safety pins or stitches. It has the advantage of being more easily reapplied should the support become slackened and the over-riding of the fragments return.

Fractures at the acromial end of the bone beyond and between the ligaments may be treated upon the same lines; when fracture occurs in the latter situation, there is no deformity and the patient may be permitted to move about with his arm in a sling.

CLEFT PALATE.

The earlier the cleft can be closed by operation the better, and if possible in all cases this should be done before the patient learns to speak.

When the cleft only involves the soft palate and uvula the operation of *staphylorrhaphy* may be performed in a few weeks after birth. The infant being chloroformed, the head is permitted to hang backwards, a gag is inserted between the gums, the edges of the cleft are neatly pared after the uvula has been seized with forceps. Sutures of horsehair, silk, or silkworm gut are inserted and the margins of the cleft are brought together. Should there be much tension an incision may be made through the levator palati a short distance outside the line of interrupted sutures on each side or the posterior pillars of the fauces may be snipped.

The hard palate is closed by the operation of *uranoplasty*, an incision internal to the alveolar border is made down to the bone on each side of the cleft, avoiding the palatine arteries; the soft parts are next separated by a raspatory from the underlying bone and the mucoperiosteal flaps freed so as to avoid tension, and for this purpose it is advisable also to sever the attachment of the soft palate to the ridge of the hard palate behind. The edges of the original cleft are next made taut by seizing the posterior end in the forceps and shaving off by means of a straight bistoury a narrow paring from the uvula to the anterior extremity of the opening in the hard palate. Sutures of hair, silver wire or gut are then inserted so as to bring neatly into apposition the raw surfaces of the pared edges. Should tension exist from the stitches the original deep lateral incisions should be prolonged backwards to the anterior pillars of the fauces and forwards towards the central incisor teeth.

Arbuthnot Lane and Davies-Colley form a long flap on one side of the cleft by making a deep incision internal to the alveolar border, dissecting this from the bone (but leaving its inner uncut margin to act like a hinge), folding it over and inserting it under a small mucoperiosteal flap made by raising the tissue from

the bone on the other side of the cleft in the hard palate, after which the raw surfaces of each flap are sutured together.

Brophy's operation for closing wide clefts in the hard palate of infants consists in drawing the upper maxillæ together by stout silver wires before suturing the pared edges of the cleft, the wires being afterwards removed when union has occurred.

The after-treatment of cleft palate requires great care ; the child should be fed with sterilised milk from a spoon in small quantities at a time to obviate vomiting and as far as possible to prevent crying and coughing. The stitches need not be removed for 3 weeks and the mouth should be kept sweet by spraying with a Borax or weak Carbolic lotion if this does not cause crying. At a later stage great patience may be required in teaching the child to speak and to exercise the palatal muscles properly so that the air is forced through the mouth and not through the nose. When hare-lip complicates the case both operations may be performed at the same time, but it is usually advisable to operate on the lip deformity first.

Early operation gives better results as regards phonation, than if the interference be delayed till the child has learned to talk.

In cases where operation has failed or where the nasal tone of the voice renders articulation very defective much good may often be achieved by fitting the roof of the patient's mouth with an obturator consisting of a thin gold or vulcanite plate held in position by suction ; to this a tympanum of rubber may be attached posteriorly, and it may be made in front to carry any artificial teeth necessary to close up gaps in the incisors.

CLUB FOOT.

In *congenital* club foot the great majority of the cases are of the equino-varus type, and the deformity can be effectually dealt with when not severe without any cutting operation. A few days after birth systematic manipulations of the distorted foot should be patiently and perseveringly undertaken by a trained nurse. The anterior portion of the foot being grasped by one hand and the heel by the other, the sole is everted and the foot turned outwards and held for a few moments in this position, the operation being repeated many times till the greatest degree of correction is obtained. Then by flexing the foot upon the leg the tendo Achillis and its muscles are stretched in a similar manner, after which both manipulations may be combined and the muscles of the limb carefully massaged, these operations being carried out several times each day.

After some degree of correction of the deformity has been achieved for several weeks by these means, splints may be utilised ; a padded poroplastic, malleable iron or aluminium splint with a foot-piece should be applied after bending it or moulding it to the position of the limb, whilst the latter is firmly held in the best corrected position without causing pain and a bandage is

applied. Several times during the day the splint is to be removed and the manipulations and massage with douching repeated, the apparatus being from time to time further bent or remoulded as the deformity becomes less, and it may be kept on at night. By persisting with this treatment, in all mild cases the deformity may be so reduced that when the child commences to put its feet upon the ground the tendency of the foot to regain its abnormal position may have disappeared and walking movements will further advance the cure, but still great attention must be given to prevent relapse and a splint must be applied at night and so bandaged as to cause rotation outwards of the leg in order to correct the tendency of the toes to turn inwards. A walking boot with steel supports is also usually necessary for a time.

In severe cases the correction of the distortion cannot be effected by manipulation with the hands, and then tenotomy under anæsthesia must be resorted to, and the deformity overcorrected by forcibly twisting the foot into its normal position. The best practice is to first cut the structures which produce the varus distortion—viz., the tendon of the tibialis anticus, the plantar fascia, a portion of the internal ligament of the ankle-joint and sometimes the tendon of the posterior tibial muscle. After tenotomy the limb in its abnormal position is bandaged to a curved malleable iron splint, which after three or four days is removed and remodelled to the corrected varus position in which the foot is secured by bandaging. After five or six weeks of manipulation and massage the tendo Achillis should be divided and sometimes the posterior ligament of the ankle will require section. (As in the reduction of the varus deformity, should the distortion not yield to the pressure of the fingers after tenotomy a mechanical wrenching apparatus may be brought into requisition to straighten out the foot, especially when the operation has been delayed till the tissues have become firmer than those met with in the infant.) The limb is to be secured in its equinus position and after three or four days placed on an Adams' varus splint, which admits of straightening out the foot by means of a key controlling the sole-piece of the apparatus. The splint should be removed daily, and before reapplication massage with manipulations of the foot and leg must be perseveringly carried out till the child learns to walk, after which a walking boot with steel supports and a pelvic girdle should be worn till all tendency towards a return of deformity has disappeared.

In very severe cases where the distortion cannot be remedied by the above measures and in relapsing cases *Phelp's* operation of dividing all the constricting structures by an open incision down to the bone on the inner side of the foot has been practised.

When the bones in neglected cases have become deformed, the operation of *tarsectomy* is advocated, by which a wedge-shaped mass of bone consisting of portions of the astragalus, cuboid, scaphoid and os calcis is removed or Lund's *astragalectomy* may

be tried. Ogston's alternative plan has found favour; this consists in cutting down upon the tarsus and gouging out the osseous nucleus of the astragalus, anterior part of the calcis and cuboid, leaving behind their cartilaginous shells.

The other types of congenital club foot rarely call for operative procedures, and yield usually to manipulations, massage and the use of splints when treatment is commenced during the first week of infantile life. Ogston condemns promiscuous tenotomies in ordinary cases of all types and trusts to a plaster of Paris bandage applied after straightening out the deformity under chloroform, but he divides the tendo Achillis after the varus position has been treated for six weeks by the plaster splint, which is then to be applied from the toes to the middle of the thigh.

Acquired club foot or paralytic talipes is nearly always, as its second name implies, the result of infantile or spastic paralysis.

Preventive treatment is of primary importance; since the deformity results from the permanent contracture of the muscles from loss of power in their opponents much can be done by massage of the weakened muscles and passive movements which will exercise the unopposed muscles and prevent their contracture. But above all, faulty positions of the foot resulting from the paralysis must be corrected whilst the limb is in the flaccid stage, otherwise permanent shortening not only of the muscles but of the ligaments and fasciæ with changes in the bones is certain to occur. Thus it will be obvious that the early treatment of acquired talipes will be that of the infantile paralysis which causes it. In addition to massage, douching, passive movements and electricity, mechanical appliances are required to keep the foot in its normal position when at rest and a boot with irons worn when walking can be attempted.

When the loss of power in the paralysed muscles has become permanent the secondary shortening and deformity must be met by operative measures as tenotomy, division of the plantar fascia, excision of bones, arthrodesis of the ankle, tarsal and metatarsal joints and transplantation of tendons. By employing the above operative measures suitable to the indications in each case the deformities of acquired equino-varus, talipes equinus, calcaneus and the other compound types of acquired club foot and pes cavus or claw-foot may be remedied.

COCAINE HABIT.

The treatment of this condition will be described in the article on the Opium Habit.

COCCYDYNIA OR COCCYGODYNIA.

Whilst generally this condition is due to injury of the coccyx, often the result of difficult delivery, it may be caused by a true neuralgia of the sacral nerves which will only yield to persistence in the use of antineuralgic remedies. Occasionally it may be the

local manifestation of the hysterical condition, in which cases it will rapidly disappear after a few applications of the actual cautery or galvanic current. When the pain is due to rheumatism of the sacro-coccygeal joint Aspirin or Salicylates will be indicated. Relief may sometimes be obtained by wearing a Belladonna Plaster, cut to the shape of the parts, and terminating in a pointed end or tail, which covers the skin over the lower part of the sacrum and coccyx, coming forwards to near the anus. Any local anæsthetic may be employed from time to time to give temporary relief, and occasionally benefit is derived from the application of blisters or counter-irritants like the liniment of Iodine, or Corrigan's Iron.

Ménière uses the following suppository at bed-time :

R. *Extracti Belladonnæ* V. gr. $\frac{1}{4}$.
 Extracti Hyoscyami gr. $\frac{3}{4}$.
 Iodoformi gr. $\frac{3}{4}$.
 Olei Theobromatis gr. xx. *Misce.*

Or Chloral Hydrat., $1\frac{1}{2}$ grs. ; Extract. Valerianæ, $1\frac{1}{2}$ grs. ; Olei Theobromatis, 20 grs.

If the pain continue in spite of rest in the recumbent posture and the use of the above agents the coccyx must be dissected out through a free median skin incision and excised with its periosteum—an operation which gives better results than Simpson's plan of subcutaneous section of the muscles attached to the coccyx. Where the coccygeal pain is associated with difficulty of defecation, the condition will often be found to be due to fracture and displacement of the lower fragment, which should be removed without delay. If due to the presence of anal fissure or hæmorrhoids, these should also be dealt with surgically.

COLIC, Biliary—see Gall Stones.

COLIC, Intestinal.

The immediate indication is the relief of pain when this is severe; afterwards the cause of the attack will often afford the best indication for the nature of the treatment required. Thus the colic of infancy generally depends upon an error in feeding, and in the majority of cases will be found to depend upon the presence of indigestible milk curd, which, if not speedily remedied, may give rise to rapidly fatal enteritis. A smart purge (one teaspoonful of Castor Oil), combined with carminatives and a change of diet, will give permanent relief. If the milk of the mother or a healthy wet nurse is not available, peptonised milk or a pre-digested liquid food must be employed, or $\frac{1}{2}$ gr. Papain may be added to each bottleful of diluted cow's milk.

Infantile colic should never be treated by Laudanum. The

Oil of Anise, 1 to 2 drops on sugar, may be given every hour. Peppermint is more suitable for older children and adults. Dill Water, with a little Magnesia, is a favourite domestic remedy.

R. *Magnes. Carb.* gr. xx.
 Syrup. Zingib. ʒiij.
 Spt. Chlorof. ʒxx.
 Aquæ Anethi ad ʒij. *Misce.*

Fiat mistura. Sumat ʒj. omni hora si opus sit.

Yeo recommends Gregory's Powder, 1 dr. ; Fetid Spirit of Ammonia, $\frac{1}{2}$ dr. ; Tinct. Card. Co., 3 drs. ; Spt. of Chloroform, $\frac{1}{2}$ dr. ; Caraway Water to 1 $\frac{1}{2}$ oz. 1 to 2 drs. every hour.

Eustace Smith recommends Resorcin as an antiseptic administered in combination with carminatives and alkalies ; he gives 2 grs. resorcin every three hours to a child 6 months old.

In adults, if the colic depends upon the presence of irritating, indigestible, or fermenting food, a smart purge, with Opium combined, should be given. Castor Oil is the safest of all cathartics in such cases, as there is always the remote possibility of some underlying organic trouble being present.

The following is a well-tried formula :

R. *Ol. Ricini* ʒiv.
 Tinct. Rhei Co. ʒij.
 Tr. Opii ʒxx.
 Aquæ Cinnamomi ad ʒij. *Misce.*

Fiat haustus statim sumendus p.p.a.

When castor oil is rejected by the stomach 5 grs. Calomel with $\frac{1}{8}$ gr. Morphia may be placed upon the tongue and washed down with a little water, and it is a good plan to administer a large enema of warm water, and when scybalous masses are detected in the rectum these may require to be broken up by mechanical means. Before the cathartic acts the patient may be put into a hot bath (temp. 104°), and a large Linseed and Mustard Poultice applied to the abdomen after he is put to bed. Hot Turpentine stupes may be used instead of the bath. The ordinary India-rubber bottle, filled with hot water, and laid against the stomach region, affords great comfort in all cases.

Should the pain continue unrelieved, a hypodermic of $\frac{1}{8}$ gr. Morphia, with 1 min. of the B.P. Solution of Atropine, may be given in conjunction with a glassful of hot punch. Chloroform has been administered where the suffering has been acute, but in simple colic it is seldom required. The following may be tried in chronic cases, or where the attacks recur :

Asafetida—The tincture, or fetid spirit of ammonia, in doses of 1 dr. Sal Volatile—In teaspoonful doses, largely diluted or combined with whiskey or brandy. Ether—In teaspoonful doses of the spirit, or of Hoffman's Anodyne, or even teaspoonful doses of the pure ether might be given alone or in a little spirit. Belladonna—15 mins. of the tincture may be administered at one dose. Ginger or Cardamoms—In teaspoonfuls of the tinctures diluted. Essential Oils—Cajuput (5 mins.), Chamomile (3 mins.), Peppermint (5 mins.), Cinnamon, Cloves, or Caraway (3 mins.), or Camphor (3 grs.)—every two or three hours. Chlorodyne—15 to 30 mins.—is a popular remedy of great power and certainty of action.

COLIC, Lead.

When the pain is very severe and persistent and does not yield to warm poultices to the abdomen and a hot bath, Morphia hypodermically should be administered. The colon should be emptied by a large enema of hot water as soon as the patient comes under observation, after which a smart purge should be administered; 1 oz. Sulphate of Magnesia is the most suitable. Castor Oil acts satisfactorily, but the sulphate can be repeated every 3 hours in teaspoonful doses if the first dose fails to act, whilst repeated doses of the oil cannot be tolerated. Should the pain be severe, any of the remedies mentioned upon the previous page may be administered with the view of giving temporary relief. After the evacuation of the bowels the patient should be put upon a course of Iodide of Potassium to cause elimination of lead from the system. This course may be well supplemented by a morning purge caused by the Sulphate of Magnesia, the rationale of the treatment being to attack the insoluble lead stored up in the system, convert it into the soluble iodide which is eliminated by the urine and by the mucous membrane of the intestinal tract, and then by meeting this in the intestines it is rapidly converted into the less soluble sulphate and at once thrown out by purging with the Epsom salt before it has time to be reabsorbed.

Olive Oil in large doses has been extolled by Combemale and Weill. In addition to its laxative properties, doses of 5 oz. seem to possess some striking analgesic effect, so that constipation and pain pass off in a few days. Where the oil is vomited, 2 or 3 grs. of Thymol given before the next dose generally suffice to prevent this. Oliver recommends the administration of Sodium Monosulphide in $\frac{1}{4}$ to $\frac{1}{2}$ gr. doses with Tr. Card. Co. 15 mins. in 1 oz. water every three hours when the colic remains after purgation.

Alum, in full doses, sometimes purges in the obstinate constipation of lead colic, and it is also said to relieve the pain when purging does not occur. It may be given in doses of 20 grs.

Diluted Sulphuric Acid, in 20 min. doses, may be taken in half a tumblerful of water as a drink frequently during the day, or Lemonade made with Sulphuric Acid instead of citric and tartaric acids, as ordinarily employed by lemonade makers. This

beverage is a valuable prophylactic, and may be given with the Iodide in bad cases.

Harrogate Water, Sulphur, Onions, Garlic, and other sulphur-containing bodies have been used successfully with a view of causing elimination. Sulphur baths have been recommended for the same reasons, and a diet of milk in large quantities favours convalescence. (See also under Plumbism, where the prophylaxis is fully discussed.)

COLIC, Renal—see Stone in the Kidney.

COLITIS.

The acute simple *catarrhal* form of the disease manifesting itself mainly by the presence of diarrhoea is to be treated as any ordinary form of irritative diarrhoea by rest in bed, a diet of milk and lime water, with egg albumin, arrowroot, cornflour or other smooth farinaceous food given in small quantities. Abdominal pain is best relieved by the application of the hot-water bag, and tenesmus by a small enema of starch containing 15 mins. Laudanum. Unless the symptoms be very acute it is a good plan to administer 2 to 4 drs. Castor Oil at the start in order to expel any irritant in the intestines, and when this cannot be borne the colon should be once a day washed out with a copious enema of warm water. The routine method of administering vegetable astringents like catechu and tannin is irrational, as these upset the stomach and may never reach the colon. The best practice is to give a mixture containing 30 grs. Carbonate of Bismuth suspended in freshly prepared mucilage and chloroform water with 5 mins. Liquor Morphiae every two or three hours. When the diarrhoea persists and the motions keep profuse and watery, astringent treatment must be tried. The best remedy is Tannalbin—a drug which passes unchanged through the stomach ; it may be given in doses of 20 grs. with the same amount of Bismuth in a cachet.

Mucous or *membranous* colitis is a most intractable affection occurring in neurotic subjects. The treatment must be varied from time to time, since the frequent painful membranous discharges usually alternate with periods of obstinate constipation. During the attack of pain and diarrhoea the patient must remain in bed and a hot-water bag or poultice is to be applied to the abdomen ; the colon should be flushed out with a weak warm Boric Acid solution or a large enema of warmed Olive Oil should be given and retained if possible. The writer's routine practice is to inject into the colon warm strained Linseed decoction as much as the patient can tolerate so as to thoroughly sluice out the bowel.

Opiates are to be avoided ; owing to the neurotic condition the opium habit is very liable to be induced. The best routine drug treatment is large doses (30 to 60 grs.) of Carbonate of

Bismuth every four or six hours ; it should be given in freshly prepared mucilage. Purgatives as a routine are contra-indicated ; the spells of constipation are best cut short by enemata, but occasionally a mild cathartic must be administered and Castor Oil is preferable to all others, but there is great difficulty in gauging the dosage, a teaspoonful at one time purges freely whilst at other times 1 oz. has no effect, and this is even more noticeable with salines. Intestinal antiseptics are as a rule useless, but $\frac{1}{2}$ gr. Calomel twice daily may be given in courses of about a week with advantage. Hale White recommends Cyllin, which may be administered in 3 min. Keratin capsules.

Much has been written about dietary ; two opposite systems of dietetic treatment are vaunted. Thus Langenhagen insists upon a dietary affording the least possible indigestible residue, all fat, green vegetables and fibrous constituents being strictly forbidden, and in severe cases he gives milk only with eggs, beef tea and pounded raw meat.

Von Noorden's dietary, on the other hand, aims at leaving the largest amount of cellulose residue to pass through the intestines. Fat is to be freely given—viz., $\frac{1}{2}$ pound of butter and $\frac{3}{4}$ pint cream daily—coarse green boiled vegetables mashed with butter and brown bread of the coarsest kind of wholemeal flour containing the largest possible percentage of bran or husk. Thick vegetable soup containing all the insoluble envelopes of the dried peas and lentils employed in its manufacture ; baked fruits and potatoes are also freely administered and Kissingen water allowed in small amount, massage being daily performed, both local for the abdominal wall and general for its sedative influence. The writer has tried both methods of dieting, and believes that the routine employment of either is bad practice. In cases where obstinate constipation with the passage of hard scybalous masses is a frequent complication Von Noorden's plan is a good one, and in those where frequent loose mucous discharges associated with great pain and griping are constantly wearing down the patient's health the soluble diet of Langenhagen is more suitable. The best procedure on the whole is in the acute diarrhoeal paroxysms to keep the patient upon a diet of Koumiss (p. 18) and gradually to introduce a free and mixed dietary containing abundance of fats and cellulose.

The Plombières treatment carried out at the spa in Vosges in France consists in free intestinal lavage with a copious use of the soft thermal water by the mouth, for bathing purposes and for douching. The underlying neurotic condition is, moreover, generally markedly improved by the thermal water treatment.

Hypodermic injections of fresh sea-water Plasma, as carried out by Robert-Simon of Paris, promise excellent results. He recommends an injection of 50 to 75 c.c. behind the trochanter every second or third day as described under Eczema. Larat, assuming that this type of colitis is due to nervous and arthritic

causes, has recommended as of primary importance active exercise in games, walking, gymnastics, rowing and mountain climbing.

The greatest practical difficulty next to the management of the bowels in mucous colitis is the treatment of the insomnia which is often a prominent feature, and morphine must be seldom employed; the newer hypnotics only should be used. Where in spite of dietetic and other measures the case continues intractable, good results have been achieved by colotomy and by establishing an opening in the appendix through which the colon can be daily flushed out with weak antiseptic or saline solutions.

Ulcerative colitis is often of dysenteric origin, though Ipecacuanha in every form is generally useless in its treatment. The best routine is free lavage of the colon with weak antiseptic solutions—Boric Acid being the best. These should be followed by the introduction of a 1 per cent. Argyrol solution injected in the knee-elbow position. Nitrate of Silver (3 to 5 grs. to 4 oz.), Methylene Blue (4 grs. to 4 oz.), Creolin and other antiseptic solutions are also in use. By the mouth small doses of Calomel ($\frac{1}{4}$ gr.) twice or thrice daily or a full dose followed by Castor Oil once daily gives the best results.

Serum treatment should always be employed; the Lister Institute Serum, prepared by immunising the horse with Shiga's and other types of bacilli and their toxins, is both antitoxic and bactericidal; it may be injected in 40 c.c. doses and upwards, and Antidysenteric Vaccine (Forster's) has been successfully employed in some cases.

Colotomy affords the only hope of saving life in most chronic cases, and there can always be the hope held out that the artificial anus may ultimately be closed as the colon heals by rest. After colotomy constant flushing of the bowel with antiseptics will be required daily. The establishment of an opening in the appendix with the view of irrigating the colon by antiseptics has proved efficacious, but in severe cases colotomy is preferable.

The diet should be such as leaves the minimum of residue to pass through the colon; strong clear soups, milk, Koumiss and scraped raw meat may be freely administered.

COLLAPSE AND SHOCK.

The first condition is generally due to loss of blood from hæmorrhage or to profuse diarrhœa as in cholera, which reduces the vascular tension throughout the body. The treatment is obvious: the vessels must be filled by the introduction into the system of Normal Saline Solution. In mild cases large saline enemata may suffice, but when the collapse has become established neither this nor hypodermic injection of the fluid is to be relied upon. The patient being placed in a bed, the feet should be raised and the head lowered, and a bandage having been applied to each lower extremity to press the blood out of the limb into the large vessels,

Intravenous injection of saline solution should be performed. The breathing being liable to fail, Artificial Respiration may be demanded. In the sudden collapse following blows over the splanchnic area the paralysed vaso-motor centres may be stimulated as in syncope, by the inhalation of strong Ammonia or Acetic Acid vapour, and later by Alcohol given by the mouth. The hypodermic injection of Strychnine is rationally indicated. The Japanese method of treatment consists in making a number of sharp blows over the seventh cervical vertebra till reaction occurs.

Shock as rightly pointed out by Mummery is due not to paralysis of the vasomotor centres, but to exhaustion of these, and hence strychnine or other stimulant is contra-indicated, but in mild cases of shock the condition of severe collapse may supervene as in a secondary hæmorrhage following a prolonged surgical operation. Fortunately, however, the main indication is the same in both cases : the head and shoulders of the patient should be depressed, the limbs bandaged and Saline Solution given by the veins, hypodermically or by the rectum, the venous channel being selected in all severe cases. Artificial respiration should be kept up when the breathing shows signs of failure.

Adrenalin Solution is indicated in all cases of severe shock, and it should be introduced along with the saline ; its action being exerted on the vessels independent of the influence of the vaso-motor centre, the blood-pressure is at once raised. 15 mins. adrenalin chloride solution should be added to the intravenous saline injection. Ergot principles as Tyramine and Ernutin act in a similar manner. Morphia hypodermically is valuable ; by diminishing or cutting off the centripetal stimuli it tends to reduce the extent of the shock.

The preventive treatment of surgical shock is of importance, and in prolonged operations Ether or A.C.E. mixture should be always preferred to chloroform ; warmth to the extremities should be maintained, and in abdominal operations the shortest exposure and handling of the peritoneum and especially douching with cold liquids must be guarded against. A hypodermic of Morphia combined with Strychnine or a small dose of Atropine should always be administered previous to operation. Crile injects Cocaine or Eucaine into the proximal end of the nerves about to be divided. Barker's method of artificial feeding by the preliminary hypodermic administration of sterile 5 per cent. solution of Glucose is a valuable addition to the surgeon's armoury when prolonged operation is to be undertaken. Sterile glucose tubes are procurable, the contents of which, when added to 1 pint of boiled water, make an isotonic solution.

In severe traumatic shock, operations, except in the case of uncontrollable hæmorrhage or sepsis, should, when possible, be postponed till the symptoms have been relieved by the above-mentioned treatment.

COMA.

No treatment can be undertaken with any hope of success till the diagnosis of the cause of the unconsciousness gives the physician an indication for the use of remedial agents. A head injury, meningeal inflammation, apoplexy, sunstroke, opium or alcohol-poisoning, uræmia or hyperpyrexia may be the cause, and should be promptly met by the treatment as detailed under the heading of the individual primary affection. The large dose of Calomel suitable to an apoplectic patient may cause the death of a patient seized with coma from diseased kidney. To treat the coma of opium as one would treat the profound unconsciousness caused by hyperpyrexia would be to allow the patient to speedily pass beyond the reach of remedies.

Where no previous history can be obtained of the cause of the coma, say in a subject picked up in the streets, Sinapisms may be applied to the back of the neck, spine, abdomen or back of the legs. A smart purgative (one drop of Croton Oil) is safe, and can do no harm; often the Cold Douche may be used. If there be even a suspicion of poisoning, the soft tube of the stomach pump should be passed, and the contents drawn off and examined. No harm can come from such procedure, whilst, should the patient die without this having been done, and subsequent information be forthcoming at the coroner's court, serious blame will be meted out to the attendant, even though pumping would have been useless. Valuable information may be obtained by using the catheter in such cases and examining the urine drawn off. The coma due to a general toxæmia causes symptoms which are always bilateral, both sides of the body being equally flaccid and powerless, whilst even in the severe cerebral lesions causing complete unconsciousness some variation of the motility of the limbs may be found by a careful comparison of each side of the body, and pupil changes or deviation may be detected. (See the treatment of each of the primary affections under its heading, *i.e.*, Apoplexy, Diabetes, Uræmia, Poisoning by Opium, Alcohol, &c.)

CONCUSSION AND COMPRESSION OF THE BRAIN AND SPINE.

The treatment of concussion of the brain differs materially from that of shock, though the two conditions are pathologically associated. Absolute rest in a darkened room, with silence and freedom from all exciting surroundings, with the patient lying flat upon a firm mattress, should be insisted upon. When the unconsciousness or dazed condition shows signs of passing off the head should be elevated and the ice-cap used, and if the symptoms of reaction are well marked leeches should be applied to the temples. A drop of Croton Oil with 5 grs. Calomel should be administered and no food given save a few spoonfuls of diluted milk.

Owing to the dangers of cerebral hæmorrhage, saline injections and stimulants must be avoided ; application of Ammonia to the nostrils, which may excite sneezing and raise the vascular tension, is also to be condemned. The period of rest and quiet must be prolonged till a considerable interval after all symptoms have passed away ; at least 10 to 20 days should be spent in absolute quiet, and if the condition known as cerebral irritation should supervene the rest and quiet must be maintained for several weeks and no animal food of any kind administered.

Concussion of the spinal cord should be treated upon the same lines and the same precautions taken to avoid hæmorrhage ; the use of the catheter being generally necessary, the most rigid asepsis must be maintained.

Compression of the brain is due to increase in the intracranial pressure, and may supervene upon concussion when one or more hæmorrhages follow after contusion or laceration of the brain substance, in which case trephining will be indicated. The treatment of compression of the brain will be detailed under the heading of each organic condition which causes it, as Head Injuries, Meningitis, &c.

CONDYLOMATA.

The most rigid cleansing and drying of the moist patches must be carried out, after which each should be dusted over with a powder consisting of equal parts of Calomel and Calamina, and wherever the moist surfaces come into contact they should be separated by a layer of dry gauze or lint. Ointments are less efficacious than drying powders, and one or two applications of the Acid Nitrate of Mercury solution may be lightly made by swabbing the patches with lint on the end of a probe before applying the powder. Iodoform is most suitable for neglected condylomata about the vulva and anus where there is much discharge. Drier condylomata may be painted over with a 1 in 10 solution of Sublimate or Salicylic Acid in Flexible Collodion.

Chromic Acid (1 to 5 of water) speedily destroys mucous patches in the mouth and on the tonsils ; it must, however, be used sparingly, as its poisonous effects, when absorbed, are well known. A 1 in 50 solution may be repeatedly applied with a brush after drying, but one light application of the stronger solution is safer. Corrosive Sublimate (1 in 250) is quite as efficacious, but the writer does not hesitate to dry the patch carefully with blotting-paper and apply a light swab of Pernitrate of Mercury solution even to the tonsils when the patches are spreading, taking great care that the liquid cannot possibly flow over the surface.

Nitric and Carbolic Acids may be used as caustics, whilst the strongest Zinc Chloride Solution will rapidly destroy external patches, and a weak lotion of the same (10 grs. to 1 oz.) makes a good astringent dressing for after-treatment.

The constitutional treatment by Mercury must be pushed till long after the disappearance of all local signs of the disease, and the highly infective nature of the discharge must be always remembered by the dresser or nurse. Patches of long standing may be freely cut off with a knife or scissors after the application of Cocaine, and a subsequent application of any strong caustic will stop all hæmorrhage, and destroy anything left by the cutting instrument.

CONJUNCTIVITIS.

Save the mild form of conjunctival inflammation caused by the irritation of foreign bodies or of eye-strain, all other types of conjunctivitis must be regarded as microbic and infectious. Hence *preventive* treatment is of primary importance, the chief element in which is scrupulous cleanliness and in the case of school-children isolation. All towels, sponges, basins, handkerchiefs, brushes, eye-droppers and douches, &c., should be repeatedly cleansed, and each child must have its own supply.

Catarrhal conjunctivitis yields as a rule readily to any mild antiseptic or astringent lotion, as Zinc Sulphate 1 to 2 grs., Boric Acid 4 to 8 grs., Alum 3 grs., Acetate of Lead 1 gr., Tannic Acid 1 gr., Zinc Chloride $\frac{1}{2}$ gr., Perchloride of Mercury $\frac{1}{10}$ gr., to each ounce of distilled water.

In prescribing eye lotions the best results are obtainable by adding some inert substance to make them of isotonic strength—*i.e.*, of the same osmotic pressure as the blood, which should be, as in the case of normal saline solution, 0.9 per cent. or slightly less; by this means smarting may be obviated. Maddox explains the soothing action of boric acid on this hypothesis; 4 grs. to the oz. of this antiseptic makes a practically isotonic solution, and when a strong substance like perchloride of mercury is employed for washing out the conjunctival sac 3 or 4 grs. of sodium chloride per oz. of lotion should be added to it. Bandaging of the eyes is never necessary, and the patient should spend as much time as possible in the open air, wearing darkened glasses if necessary.

Though the local analgesic action of opium is doubtful, Swanzy recommends 1 dr. of the tincture to be added to each oz. of the boric or zinc collyrium. The following is a good routine application.

R. *Zinci Sulphatis* gr. x.
 Acid. Borici gr. xxxij.
 Tinct. Opii ℥iv.
 Aquæ Rosæ ad ℥viiij. *Misce.*

One of the above lotions may be used every 2 to 4 hours by partially filling a small douche-glass with it and applying it closely to the opened eye, when by a nodding movement of the head the entire conjunctival sac can be thoroughly sluiced.

If the inflammation does not readily yield to the above treatment, a silver salt should be applied to the lids. 1 in 4 Argyrol is a favourite application ; a 10 gr. to 1 oz. of the Nitrate solution may be freely applied to the lid conjunctiva with a brush or on wool, and after a few seconds a strong solution of chloride of sodium should be instilled to precipitate the nitrate and the eye irrigated freely with water or normal saline solution, the operation being repeated daily. If a 1 or 2 per cent. solution is used, salt need not be applied after it. The lids should be smeared with Lanoline or Boric Ointment every night to prevent the secretion being glued in.

Phlyctenular conjunctivitis, also known as strumous ophthalmia, yields usually to Boric Acid or Zinc Sulphate lotions ; there is often much photophobia present, as corneal ulcers are liable to form, in which case Atropine must be instilled and the remedies indicated in corneal ulceration employed.

As the disease usually appears in ill-fed and badly cared for children, strict attention should be paid to regular feeding with nutritious food and a free open-air life. When out of doors the child may be permitted to wear a broad shade over both eyes ; this should not be closely fitting, but should project like the peak of a cap, so that the eyes may be exposed to the air whilst shaded from sunlight, or dark glasses may be worn. These cases often do well under Pagenstecher's Ointment made of the strength of 5 grs. to 1 oz., smeared over the lid margin, or dry Calomel may be applied on a fine camel's-hair brush. The blepharospasm often present constitutes a difficulty in the application of remedies ; it can be overcome by holding the child's face under water in a wash-hand basin for a few moments at a time, after which an examination of the eye and the application of astringent remedies can be readily carried out.

Follicular conjunctivitis is often associated with enlarged tonsils, adenoids and other forms of lymphatic overgrowth, and open-air life, with judicious feeding and Cod-Liver Oil combined with Syrup of Iodide of Iron, should be prescribed. An astringent lotion, Zinc Sulphate 2 grs. to 1 oz., or 1 gr. per oz. of Zinc Chloride, or an ointment of Copper Sulphate 10 grs. to 1 oz. Vaseline should be applied. When much catarrhal conjunctivitis is associated with the presence of the follicles which are often confined to the lower fornix of the conjunctiva, 10 grs. Nitrate of Silver solution may be applied to the lids and Chloride of Sodium swabbed on.

Membranous, croupous or *diphtheritic* conjunctivitis must be treated by the injection of the antitoxic serum at the earliest possible stage, even when the case is of the mildest type and no other manifestation of diphtheria is present. Some authorities instil the serum into the conjunctival sac, but it is better never to trust entirely to its local action. The mildest type of membranous conjunctivitis, known as the "croupous," is recognised by the ease with which the superficial exudation is detachable ; the treatment

of this affection is that of the simple catarrhal variety, the conjunctival sac being frequently flushed with warm $\frac{1}{4}$ per cent. Boric solution; many ophthalmic surgeons use a 1 per cent. Quinine solution for this purpose. Though it is not probably due to the diphtheritic bacillus, it is a wise routine to inject serum. Silver Nitrate should never be used in the membranous varieties whilst exudation is present.

In the severer or truly diphtheritic type the same local treatment is to be at first employed, the Boric or Quinine irrigation being used freely and often, and iced compresses or Leiter's tubes applied to the eyelids, unless when warm or hot compresses afford most relief. After the detachment of the membrane Silver Nitrate may be applied to the velvety pus-secreting lids, but it must be used with extreme caution owing to corneal trouble, and if possible should be avoided. Underlying ulceration must be treated by Atropine or Eserine, as described under Cornea, and the greatest care taken to prevent adhesion of the lids to the globe.

Purulent conjunctivitis, purulent ophthalmia or acute blenorrhœal conjunctivitis is usually in the adult due to inoculation of gonorrhœal matter into the adult eye, and the less frequent cases where infection is conveyed to the eyes of an adult from those of an infant affected with ophthalmia neonatorum. The treatment during the early stages should consist of iced compresses frequently applied and thorough irrigation of the conjunctival sac with $\frac{1}{4}$ gr. to 1 oz. Perchloride solution or the same strength of Permanganate of Potash till the swelling and induration of the membrane and lids are reduced. If great chemosis of the conjunctiva occurs—a dangerous symptom—it should be freely incised, and bleeding encouraged by hot applications and by application of leeches to the outer angle of the lids, or to the temples; it may be necessary to incise the external canthus. The other eye, if sound, should be most carefully guarded against the possibility of inoculation by bandaging over a pad of cotton-wool, or in the case of infants by sealing the lids with collodion or by using a Buller's shield.

As soon as the swelling is reduced and the suppurative stage established Nitrate of Silver 10 to 20 grs. to 1 oz. should be applied on cotton-wool to the everted lids, which should then be swabbed with solution of Chloride of Sodium, the operation being repeated at the end of twenty-four hours. In the interval the sac should be frequently flushed out with $\frac{1}{4}$ gr. to 1 oz. Perchloride of Mercury solution or Boric Acid, 4 per cent. solution, and the lids kept from sticking to each other by applications of Boric Ointment. Many surgeons prefer the Mitigated Caustic Stick to the nitrate solution. After the acute purulent stage has been subdued, a weak astringent lotion, Copper Sulphate, Zinc Sulphate or Chloride, should be employed. Corneal ulceration must be treated by Atropine or Eserine and astringents avoided.

Ophthalmia neonatorum is identical with the above condition, being nearly always caused by gonorrhœal infection during the

progress of the infant's head through the vagina or immediately afterwards. Preventive treatment is of vital importance, and has become a routine in most lying-in hospitals. The vagina should be washed during labour with a strong Permanganate or weak Perchloride solution, and the child's eyes should be carefully washed and a few drops of a 2 per cent. Nitrate of Silver solution instilled into the conjunctival sac immediately after birth (Crédé's method), or the eyes may be irrigated with a 1 in 5,000 Perchloride of Mercury solution.

Where the purulent conjunctivitis has already appeared when the infant comes under the physician's care, the case must be energetically treated as in the adult, the best routine being irrigation every hour or two with a 1 in 10,000 Perchloride or Permanganate solution, followed later by the application of Nitrate of Silver in strong solution (10 to 20 grs. per oz.) or the Mitigated Stick, after which Chloride of Sodium is to be swabbed on the everted lids. A 25 per cent. Argylol solution is preferred by some surgeons both in the infantile and adult forms of gonorrhœal ophthalmia.

Granular Conjunctivitis, Granular Ophthalmia, or Trachoma.—This being a highly contagious disease, liable to cause serious visual defects, its preventive treatment in schools, asylums and barracks is of great importance. Isolation is therefore necessary, and towels, sponges, handkerchiefs, brushes, &c., must be carefully disinfected, and when belonging to infected subjects must never be used by the healthy. Those affected in schools should be kept by themselves and should spend most of their time in the open air, with the best food, ventilation and hygienic surroundings possible, overcrowding and uncleanness being powerful factors in the spread of the disease.

The treatment of the rare acute form of the disease is identical in its early stage with that of acute catarrhal conjunctivitis. The eyes should be irrigated every two or three hours with 4 per cent. Boric Acid solution, and after the subsidence of the conjunctival inflammation the remedies indicated in the chronic affection should be employed. The writer has successfully treated mild chronic cases of the affection in a large charity school, when these were detected early, by frequent irrigation with a 1 in 5,000 solution of Perchloride of Mercury solution and by an occasional brushing of the inner surface of the lids with a 1 per cent. solution. Some authorities recommend the application of a 2 per cent. solution in glycerin rubbed into the lids.

When there are no granulations visible the best routine is the application, after Cocaine, of solid Sulphate of Copper to the velvety conjunctiva every second day, the eyes being irrigated three or four times a day with a 1 in 10,000 Perchloride solution. Should there be much swelling or any corneal ulcers, this copper treatment is contra-indicated, the brushing over of the lids with a 2 per cent. solution of Silver Nitrate or the Mitigated Stick, followed by Sodium Chloride, being the best procedure.

When the trachoma bodies or granulations are exuberant and project much beyond the surface they may be excised or destroyed by the electro-cautery when only a few are present, but the best routine treatment of the granulations is that known as "expression." Grady's trachoma forceps being employed after thoroughly cocainising the conjunctival sac, each portion of granulation tissue is separately seized and broken down, so that the trachomatous matter is squeezed out, after which the caustic solution 2 grs. to 1 oz., the solid Mitigated Caustic or Copper Sulphate is applied and the resulting inflammation treated by Boric Acid irrigation and cold compresses. When pannus occurs (a fleshy growth over the cornea), should there be no ulceration of the cornea, and the trachomatous growths be dry, the best treatment is the employment of Merck's Jequiritol, which is to be instilled with the view of setting up an acute inflammatory action. The degree of inflammation may be easily controlled by the use of jequiritol serum and iced compresses. After the subsidence of all inflammatory reaction the pannus is usually found to have disappeared, though Copper Sulphate treatment may be required to remove any conjunctival granulations which remain.

The X rays have recently been successfully employed for the treatment of pannus.

Carbonic Snow has recently been extensively tried by Harston at Hong Kong and the results are most successful. There is little pain, and the disease rapidly yields, and a splendid cicatrix results. When pannus exists he uses the X rays.

In all cases the most persevering treatment for a long period must be kept up, and it is most desirable that in very chronic examples of the disease a method should be placed in the hands of a skilled nurse when such can be safely done, in order to insure that between the intervals of the more active treatment by the ophthalmic surgeon the disease be not permitted to relapse. The use of the solid Copper Sulphate for this purpose is a valuable routine, and if a drop of Cocaine be instilled a few minutes before the application the remedy need cause little pain, but it must not be employed when corneal ulcers are present. Corneal ulceration will require Atropine or Eserine, and as some ointment is necessary to prevent sticking together of the lids 4 grs. of the Yellow Oxide of Mercury to 1 oz. Vaseline or Boric Acid Ointment may be used throughout the treatment.

More serious operative treatment has been advocated from time to time. Thus Darier advocates the following under Chloroform anæsthesia: Enlargement of the palpebral fissure; exposure of the entire sac by everting the lids; scarification of the conjunctiva by deep incisions parallel to the margin of the lids; scraping with a Volkmann's spoon, and brushing in with a hard brush a solution of Corrosive Sublimate, 1 gr. to 1 oz. Schneller excises the fornix of the conjunctiva with the view of preventing extensive cicatricial contraction.

CONSTIPATION.

Of all the causes of chronic and habitual constipation by far the most potent is the habit of disregarding the call of nature to evacuate the contents of the bowel or postponing the response till a more convenient season.

No success can be attained in the prevention or treatment of this condition without a scientific knowledge of the normal function of the bowel. In the great majority of healthy subjects the fæcal matter collects and remains about the sigmoid flexure of the colon, and does not descend into the rectum till just before the act of defecation (see the author's "Practice of Medicine," vol. i., p. 236). Its descent in health occurs usually once a day and generally after the morning meal, probably synchronising with the commencement of breakfast digestion after the stomach's long night rest. As soon as the rectum receives the contents of the colon its sensitive walls become stimulated and the resulting reflex is the call of nature above referred to. If attention to this be postponed the delicate nerve mechanism becomes deranged and the natural sensitiveness of the rectum blunted, because instead of being empty at all times save during the few moments before defecation it remains constantly full of fæcal matter whose tendency is to become drier and harder. After a time the natural alarm-clock action of the rectum ceases, evacuation then being only accomplished by the contraction of the colon driving the hardened contents of the toneless rectum in front of the more recent feculent contents accumulated about the sigmoid, this action being assisted by the voluntary expulsive efforts of the abdominal and other muscles. The main object of treatment should never in chronic cases be to effect purgation, but to restore the normal daily rhythm of the lower end of the colon and rectum. There is little, however, to be gained by the oft-given advice that the patient should go to the water-closet and strain or bear down from day to day till his efforts are rewarded by a painless operation; the result too often is the formation of piles, fissures or prolapse.

The formation of the ordinary water-closet seat is ill planned; each attempt at bearing down drives the pelvis tighter into the circular aperture of the seat, the bevelled sides of the opening also acting as an inclined plane, and the result is that the skin and mucous membrane around the anus become stretched to such an extent that cracks and fissures are formed, and the writer has satisfied himself that the brittle and unhealthy state of the integument observed in this region is owing to this stretching, which is often the starting-point of prurigo and eczematous distress. The modern fashion, originating in the sense of comfort and ease, should be corrected by the substitution of an aperture of different shape, and very much larger.

Enemata or other means for several mornings should be employed to empty the rectum until the bowel begins to show signs of responding at the fixed hour. A cold-water enema of about a

tumblerful, injected whilst in the standing posture, so as only to reach the lower part of the rectum, is the best method of starting the intestinal tube to contract. Glycerin, in doses of a teaspoonful or less, injected with a syringe made for the purpose, acts powerfully by stimulating the membrane, but its present popular professional reputation as a remedy for constipation rests altogether upon a misconception of its advantages. By its powerful stimulation of the coats of the rectum (partly through its hygroscopic property), it ultimately blunts the sensibility of the rectal nerve filaments to smaller stimuli, and if solely relied upon the end will be worse than the beginning. Its value seems to be clearly like that of most purgative remedies ; it is of use in tiding over constipation till other means have time to act.

Glycerin suppositories afford, perhaps, the most convenient of all known methods of overcoming *temporary* constipation. Often within five minutes, and sometimes immediately, a copious and painless motion may be experienced after their introduction, and in constipation arising during fevers and long illnesses their action leaves nothing whatever to be desired. In hæmorrhoidal conditions and in cases of anal fissure, however, their use sometimes may bring on a very acute attack of pain and tenesmus. The writer has generally obtained all the advantages claimed for glycerin by inserting within the internal sphincter a piece of ordinary soap shaped with a knife to suit the purpose, and this he has tried in cases of anal ulcer without any ill effects whatever, save momentary smarting.

The proper place of suppositories in the treatment of chronic constipation is that also occupied by enemata and saline purgatives. These are valuable for administration when through any change of diet or other cause the curative drug fails to produce a motion at the hour after breakfast. These agents, then, can be employed to cause prompt action of the bowel so that the rhythm of the colon and rectum may be kept up without a break.

Should there be already accumulations of fæces in the rectum and colon for some time, they must be removed, and for this purpose ordinary purgation by the mouth is not to be thought of. A tepid water enema should be given when the patient is lying upon the left side, with the view of getting the fluid beyond the accumulation ; three or four pints may be thrown up with safety.

Pure Olive or Castor Oil may be administered along with the water with great advantage. It is useless to pour the oil into the water, where it floats, and is not injected into the bowel till the very last. The nurse should lift the end of the enema pipe (lying in the water), and put it into a cupful of the oil, and continue the operation as before without removal of the other end from the rectum. After pumping up 3 or 4 ounces or more in this way the end of the pipe is taken out of the oil and dropped into the warm water again, and the pumping gently continued till the patient cannot tolerate the

introduction of any more fluid, when the motion will occur. To remove lodgments from the colon several enemata may be required, and should the mass be above the reach of the finger, weeks may be spent in pumping it out, though this is decidedly exceptional. Should the mass be low down it may be broken up with the handle of a spoon or scoop, and removed piecemeal. Injections of Oils, Gruel, White of Eggs, Linseed Infusion, and various other emollients are used. Brewers' Yeast, when injected, breaks up and causes the rapid disintegration of the impaction, and as it is harmless it should have a trial.

As soon as the intestinal tract has been cleared in a case of chronic constipation, the physician's next attempt is to assist the patient in having a daily evacuation of the bowels, or if an evacuation every second day has been the patient's life-long habit when in health, the effort should be to restore this habit, and not to attempt to improve upon nature.

Good can be done, as already suggested, by urging the patient to take a brisk morning open-air walk or ride if his habits have been sedentary. Unfortunately, in many instances, the class of patients to whom this would be valuable have little opportunity for walking, and the haste to reach their offices in the city only permits them to indulge in their usual omnibus or railway trip. To such, a half-hour's cycle ride will be followed by splendid results.

The nature of the diet is of vital importance. It is generally the small eater or spare liver who is the victim of chronic constipation, or the individual who takes his food in a concentrated soluble form, and often if such a one, from any cause, begins to eat almost any sort of food in larger quantity than is necessary for the maintenance of health, the constipation disappears. In prescribing a dietary, foods which leave a bulky residue should have the preference. Brown bread, whole-meal bread, or any bran breadstuffs are of great use. White bread made with fine flour should be entirely given up till the constipation has become conquered. Oaten meal made into porridge, and taken at bed-time or before the ordinary breakfast, is the remedy which keeps many folk in health for years.

Abundance of cellulose is advisable ; vegetables and fruit should be taken freely, and an orange or apple eaten early in the morning or orange marmalade at breakfast answers well in some cases. There is nothing better than a good supper of boiled Spanish Onion, and the writer has treated obstinate cases of constipation by this means alone with very satisfactory results. Agar-agar in coarse powder in teaspoonful doses used with stewed fruit makes a valuable laxative addition to the ordinary food.

Olive Oil every morning after breakfast is a valuable laxative and food, and when freely partaken of with salad at the evening meal it is a very efficient laxative. The writer has noticed that it is not well borne by the plethoric, or by lean folk with dark skins. The pale, washy-looking, blue-eyed, sedentary, thin subject gets

much benefit from it or from Cod-Liver Oil when taken once a day in one large dose.

Figs and Prunes are serviceable, but even children grow weary of their lusciousness. Stewed prunes do well for a short time. It is often a good thing to advise the patient to become a vegetarian or fruitarian for a time, and if he takes to the practice and makes a fad of it, his constipation, as a rule, disappears.

Brunton insists upon the constipating effects of the lime salts in the cooking and drinking water, and a diet consisting largely of boiled eggs is sometimes the cause of the most obstinate constipation and accumulation of fæces.

Cold water compresses over the abdomen in the morning are of use, and Massage or kneading of the abdominal muscles over the entire course of the large intestine may be tried in very sluggish subjects, or even a smart friction over the abdominal walls with a coarse, warm towel for five minutes on rising, followed by a large drink of cold water and a smart cold shower or plunge bath, may do more good than medicines. Brunton recommends rolling a cannon ball (7 lbs.) over the abdominal walls, following the direction of the colon, but since the mischief originating the constipation is chiefly seated in the rectum, little good need be expected in exciting the upper part of the colon.

Electricity—a weak continuous current, with one pole on the spine and a large wash-leather or sponge electrode moved about over the lumbar and hypochondriac regions or a smart interrupted current may be used with advantage in the same way.

By a careful attention to the above methods, the physician will find that most of the cases of chronic constipation will be successfully combated without having to resort to the long list of purgatives in daily use. As a rule, active purgation should not be permitted, and, in many of the cases seeking relief, continual purgation indulged in for fancied ills will be found to be the cause of the constipation.

To increase the muscular and nervous tone of the bowel, and, at the same time, to increase the intestinal secretion so as to bring the motions to a healthy state of consistence, should be the objects aimed at in the treatment of chronic constipation with drugs.

Though the number of purgative drugs is almost endless, those useful in chronic constipation should be only such as in regulated doses will produce a *laxative* effect, and hence the selection is practically confined to Cascara and Aloes.

Cascara bark comes first in value, and when all the dietetic and previously mentioned plans have failed, the patient should be placed upon small doses of the liquid extract. It may be given in various ways. One moderate dose in the evening or before bedtime, the treatment not to be commenced till the existing constipation is for the moment corrected by some brisk purgative, is the most successful plan. Beginning with an evening dose of 30

mins., in a few days the physician will obtain some idea of the dose suitable to the individual case, and the initial quantity is increased or diminished accordingly. The object to be clearly aimed at is to avoid purgation, and to give the remedy in such a dose as will secure one soft, natural motion every morning. The *amount* and the *interval* necessary to produce this result varies widely in different individuals, and in the same individual under the use of various dietaries. If the moderate dose necessary to produce a laxative effect takes a long time to act the patient must shift the time from bed hour till immediately after or before the evening meal, so as to produce evacuation after breakfast hour if possible.

The difficulty is in getting patients to graduate the dose themselves, and after a few weeks they stop the cascara altogether, through carelessness, or a belief that they are cured of the constipation, and when the bowels return to their old habit, a large dose of cascara is taken as a purge. This is certain to be followed by more obstinate constipation, and thus the remedy is set down as useless. The physician should insist upon a two months' course at the very beginning of the treatment.

Sometimes the cascara is given before meals, and capsules containing any requisite dose may be had easily from any chemist, but, though elegant and effective, the dose cannot be easily regulated when the capsular form is used. The pilular extract may be given, but the fluid is more certain and uniform in its action.

Another method is to give the cascara three times a day, after meals, in a dose equivalent to about one-third of the nightly dose. Thus, 10 mins. may be given immediately after breakfast, luncheon and dinner, but the evening dose is more rational and effective.

No matter which plan be adopted, after a few weeks the dose should be gradually diminished, still, however, taking enough to produce the healthy, natural morning motion, as if no purgative had been administered. At the end of a period, varying much in different cases, the remedy may be occasionally suspended for one day, and finally, in a few months in some cases, it may be permanently stopped.

The cascara may be given alone, or combined with some of the remedies about to be mentioned.

R. *Extracti Cascaræ Sagradæ Liquidi* ʒij.
 Tincturæ Nucis Vomiceæ ʒiij.
 Tincturæ Belladonnæ ʒiij.
 Glycerini q.s. ad ʒiv. Misce.

Fiat mistura, cujus capiat cochlearium minimum omni vespere et mane ad quatuor vicem, deinde omni vespere.

Cascara jelly made with agar-agar is becoming a favourite form for administration; the agar adds to the bulk of the fæces by absorbing water. Regulin—a patented combination of cascara and agar in the dried form—is also a valuable laxative. Both may be given in doses of 1 to 4 drs. with stewed fruit.

Aloes comes next to cascara in value in the treatment of chronic constipation, and often both laxatives may be combined with advantage. If judiciously administered, the dose of aloes need not be increased, whilst, in many cases, it may be diminished, and finally withdrawn as the constipated habit becomes cured. It is best given in combination with other laxatives or cathartics as it is slow in its action, and, when given in small doses, does not soften the motions much, but stimulates the peristaltic movement. It is a tonic, and very markedly increases the quantity of the biliary secretion. It must never be forgotten that a moderate dose of aloes requires for its action 12 to 15 hours or more, and hence the importance of administering it at a time when the normal morning hour for evacuation should not be interfered with; it should usually be given before the evening meal and not at bed-time.

Its action in chronic constipation is very materially increased by combining with it Sulphate of Iron, as in Spender's pill.

R. *Extracti Aloes Aquosi* gr. j.
 Ferri Sulphatis gr. ij. *Misce.*

Fiat pilula. Mitte tales L.

Signa.—"Take one 3 times a day for 7 days, then one twice a day for a fortnight, then one every night."

If the constipation be associated with amenorrhœa, the combination of aloes with iron is the best possible treatment.

The use of aloes in hæmorrhoidal cases is a disputed point, since large purgative doses often seriously aggravate hæmorrhoids when present, but small laxative doses generally relieve and produce decided curative effects; and good results have been obtained by treating hæmorrhoids exclusively by small doses (1 gr.) of the extract of aloes given night and morning.

Compound Decoction of Aloes is a most unsatisfactory laxative in chronic constipation, and though of the greatest value in other intestinal disorders, it is not to be depended upon, as it is almost impossible to regulate the dose so as to produce uniform results, and frequently it actually constipates.

The old-fashioned dinner pill, in which a small dose of aloes combined with Iron, Ipecacuanha, Capsicum, Nux Vomica, Myrrh, and Belladonna or Hyoscyamus, given immediately before or after dinner, is a most suitable method of treatment. The following is one of the best :

R. *Extracti Aloes Barb.* gr.j.
 Extracti Nucis Vomicae gr.ss.
 Pulveris Ipecacuanhæ. gr.ss.
 Pulveris Capsici gr.j. *Misce.*

Fiat pilula. Mitte tales xxiv. Sumat unam omni die ante prandium.

Pil. Rhei Co. and Pil. Colocynth. Co. ā gr. i. ; Ext. Hyoscy., gr. ss., is recommended by Brunton.

Sir A. Clarke used this formula :—Ext. Nuc. Vom., Ferri Sulph., Pulv. Myrrhæ, Pulv. Saponis, Aloin ana, $\frac{1}{2}$ gr. The quantity of aloin is to be increased or diminished according to the effect produced upon the bowel.

Belladonna was used by Trousseau. The *green* extract in doses of $\frac{1}{4}$ to $\frac{1}{2}$ gr. given at bed-time, alone or with as much Extract of Nux Vomica, may be tried, or may be given with any laxative in a dinner pill, when it will not only strengthen the muscular contractions of the bowel, but will, to some extent, prevent griping. The tincture, in small doses, is a very excellent treatment for the constipation of infants and children. Belladonna is also the best remedy for the spastic form of constipation sometimes met with in neurotic subjects, and usually associated with much spasm and pain.

Nux Vomica or Strychnine in constipation is of the greatest value as an adjunct to other drugs, and occasionally alone it meets every requirement. The following formula combines the most valuable of agents, and by modifying the dose of the different ingredients nearly every case of chronic constipation can be treated with success.

R. *Aloin* gr.iss.
 Ext. Cascarae gr.j.
 Ext. Nucis V. gr.ss.
 Ext. Bellad. Vir. gr.ss.
 Ferri Sulph. Ex. gr.j. *Misce.*

Rhubarb, though much used and often swallowed for many years by constantly constipated patients, is not a good remedy. In the writer's experience its tendency in chronic constipation is not curative ; aged patients employ it continually because they cannot do without it.

Colocynth is more active, but it is most difficult to graduate the dose so as to get a laxative effect. It may, however, be combined with rhubarb as in Brunton's Pills.

Podophyllin is much more valuable in the treatment of acute constipation where a satisfactory brisk purge is required, never-

theless it is useful in the chronic constipation of bilious subjects. It may be given in combination with Belladonna.

R. *Tincturæ Podophylli* ̄j.
 Tincturæ Belladonnæ ̄iv.
 Tincturæ Zingiberis Fort. ̄iv. *Misce.*

Sumat guttas xx. omni nocte ex paululo sacchari.

Podophylli Resinæ, gr. ivss. ; Ext. Aloes Aq., gr. xlv. ; Ext. Rhei, gr. xlv. ; Ext. Taraxaci, q.s. ; misce. Divide in pilulas xl. Signa—"One, two, or three at bed-time," was recommended by Nothnagel.

Euonymin in pilular form acts much in the same way, but it is feebler.

Castor Oil in small doses has been given for long periods with advantage. Thus in the chronic constipation of pregnancy it is the best remedy in morning doses not exceeding 1 dr., and may be taken with impunity all through.

Tamar Indien is an excellent remedy, and when administered with care to regulate the dose, is a very successful method of treating chronic constipation in patients whose feeble health or chronic ailments confine them to the house for the greater part of the year. It produces very large, almost solid motions, and its action is not followed by any tendency to constipation, and the dose can be easily diminished by the patient.

The new synthetic purgatives—Purgatin (anthrapurpurin diacetate) and Purgen (phenolphthalein)—are valuable aids in the treatment of constipation, but they cannot be employed for long periods with safety. Purgatin in 20 gr. doses produces one semisolid motion after about 10 hours, and it colours the urine red. Purgen in 1 to 5 gr. doses acts in half this time.

Sulphur is a good drug for the relief of chronic constipation, and may be given in the morning before breakfast mixed with a spoonful of Orange Marmalade, and the Compound Powder of Liquorice is a palatable laxative and one of the best routine drugs for occasional constipation in childhood. Two or three Compound Sulphur Lozenges may be given at bed-time.

Rubinat, Friedrichshall, Carlsbad, Hunyadi Janos, Pullna and other natural purgative waters are valuable as occasional adjuncts to the aloes or cascara treatment, and they are invaluable in the management of occasional constipation, but it will be found impossible to obtain a laxative effect by their administration. Hence upon the whole they are not to be depended upon as curative agents, and the same remark applies to the treatment at spas like Harrogate, Cheltenham and other places where saline aperients are freely administered. Often the good effects are but temporary, and the habit afterwards is aggravated.

Senna, Jalap, Scammony, Gamboge, Croton Oil, Epsom

Salt, and Mercurials are not available for the treatment of chronic, though valuable for the relief of acute or occasional constipation.

Surgical treatment has been instituted of late years for the relief of severe constipation. Thus Mansell Moullin has many times performed *Ileo-sigmoidostomy*, making a simple lateral anastomosis without excising the cæcum. Of this method of dealing with constipation the writer has no experience and has never once seen a case requiring such heroic treatment.

Constipation in Children.—In infants, the cause of the constipation, when it exists, is generally bad feeding, and it usually disappears when this error is corrected. The usual error is deficiency in sugar or fats. The former may be remedied by the administration of a teaspoonful of brown or Demerara sugar and the latter by a similar dose of cream. When the constipation is due to scarcity of water, as in cases where artificial food is administered of the consistency of a thick cream or paste, water should be freely supplied. The constipation caused by the presence of firm curds if not relieved is liable to end in acute diarrhœa. The dilution of the cow's milk with barley water, or beef-tea, or peptonisation should be resorted to. Manna is a safe laxative, though now seldom employed; it may be given for long periods to infants and young children till the constipated habit disappears.

The best drug for infants and young children is Castor Oil, and a daily very small dose—half a teaspoonful—generally removes the condition. A glycerin suppository may be used. This remedy is not objectionable in the case of very young children, as the writer thinks that the act of evacuation in them is more dependent upon the state of the great intestine higher up than the rectum, and the fact of accustoming the rectum to a smart stimulus from day to day does not appear to blunt its sensibility so as to interfere with the act of defecation after the injections are stopped, as appears to be the result in adults. Soap suppositories, made by cutting a small fragment of hard soap into conoidal form, and inserting it into the rectum, act also very well.

Gentle massage of the abdomen is very serviceable in the constipation of infants and young children, but as a rule injections of watery fluids are to be avoided unless fæcal accumulations are present, owing to the ease with which the colon can be dilated and its tonicity injured.

The constipation of older children will seldom require drug treatment, the condition usually speedily yielding when errors in diet are corrected and when the hour of defecation is punctually adhered to and active exercises prescribed.

Compound Liquorice Powder, or 2 to 5 gr. doses of Sulphur, may be given for considerable periods with advantage.

To *acute* attacks of constipation occurring in a person otherwise healthy, and where there is no abdominal obstruction, it will

be seen that the foregoing remarks do not apply, and the treatment for such attacks is a smart purge. Any of the remedies already mentioned may be given in large doses. The old-fashioned method is the best, of giving at night a combination of cathartics, whose slow action upon different parts of the intestinal tube is "overtaken" by a smart dose of a Saline early in the morning. Thus, 5 grs. Pil. Hydr. and 5 grs. Pil. Col. Co. taken at bed-hour, and 2 oz. Black Draught early in the morning, are a very efficient purge for robust men.

Diarrhœa is sometimes, especially in elderly people, caused by a mass of scybala lodged in the colon, and the proper treatment in such a case is to commence with large enemata of tepid water, given whilst the patient is placed upon his left side. Should the mass be high up in the colon, the patient should be placed upon his knees and elbows, and afterwards turned over upon his right side, so as to assist the water to gravitate towards the ileo-cæcal valve. A large dose of Castor Oil or other purgative should be given after the obstruction has been removed.

CONVULSIONS.

Treatment must depend upon the nature of the cause in every case.

Thus the presence of a mass of round-worms in the intestinal canal of a child will call for Santonin and a purgative. (See *Ascaris*.) The convulsions arising in a patient suffering from advanced renal affection will demand the active treatment necessary for uræmic poisoning. (See *Bright's Disease*.) Epileptic convulsions will be best prevented by Bromides, &c. (See *Epilepsy*.) In the same way the reader will find, under *Hysteria*, *Tetanus*, *Poisoning by Strychnine*, *Teething*, *Apoplexy*, *Alcoholism*, *Puerperal Convulsions*, &c., the appropriate remedies mentioned by which the convulsions may be prevented or modified or rendered less frequent.

If called to see a patient labouring under an attack of convulsions (without any apparent cause demanding immediate attention, such as pregnancy or uræmia), the physician will have considerable difficulty in preventing himself from acting under the impulse that he must do something. The position of "masterly inactivity" is the safest as regards drugs in a situation of this sort, where at the moment little can be determined about the causation or pathology of the symptoms. The patient should be placed in bed upon his back with his head and shoulders slightly raised, and all constrictions about the neck, thorax, or abdomen removed. If the tongue be protruded, and in danger of being wounded by the closure of the teeth, a lemonade cork may be inserted between the upper and lower molar teeth on one side. Unless the convulsive movements be severe and liable to cause contusions of the limbs or scalp, restraint should not be resorted to. In a series of rapidly succeeding attacks the vapour of Nitrite of Amyl may be

judiciously employed. Chloroform or Ether may be administered upon a sponge, or Chloral Hydrate may be given by the rectum. Heroic measures, like blood-letting, are unjustifiable, except in puerperal cases.

Infantile Convulsions.—As a proportion of the cases of convulsions arising in infancy from delayed dentition, bowel or other passing troubles, tend to end in epilepsy in the children of neurotic parents, it is most desirable that careful attention should be given to the prevention of further attacks after the immediate attack has been treated.

During the seizure a *warm* but not hot bath should be immediately resorted to; if there be hyperpyrexia the water should be tepid. Ice may be applied to the head or a cold stream of water directed against the fontanelle and a whiff of the vapour of Chloroform or of Amyl Nitrite may be given. The practice of injecting Hyoscine or Morphia hypodermically has been advocated, but the physician will be wise who contents himself with the rectal administration of Chloral Hydrate and Bromides or with the use of these agents by the mouth as soon as the power of swallowing returns. 3 grs. chloral and 10 grs. bromide of soda may be injected into the rectum of a child six months old. The following may be given in teaspoonful doses by the mouth every 2 hours for 4 doses :

R. *Chloral Hydrat.* gr. xx.
 Sodii Brom. gr. xl.
 Phenazoni gr. x.
 Syrupi et Aquæ ad ʒij. *Misce.*

The bowel in every case should be cleared out by a small dose of Calomel or Castor Oil.

Where cyanosis is marked and persistent a little blood may be let out from a vein in the arm, but leeching is useless. In the asphyxial convulsions occurring at birth bleeding from the cord may be permitted or a vein opened. When there are marked and persistent focal symptoms in the convulsions arising after a difficult delivery meningeal hæmorrhage is probably present, and trephining may be justified in order to prevent permanent brain injury.

In all cases of infantile convulsions the bromide treatment should be continued long after the cessation of symptoms, and such children should subsequently be carefully examined for adenoids, eye troubles, rickets, or other possible sources of reflex irritation which may tend to establish the epileptic condition.

The routine plan of scarifying the gums in every case of convulsions occurring in young children is a practice of the past. The tough cicatrix, forming over the incisions afterwards, is generally the source of serious future trouble. The writer has

seen the leathery gums of infants who had been subjected to wholesale scarifications months previously for supposed delayed dentition, when the cause of the convulsions was probably a mass of curd in the intestines, the result of indigestible cow's milk. When the tooth should be above the gum, these old, dense cicatrices so hold it down that the only course is to snip a piece out of the cicatricial tissue with scissors or a knife.

If the sterilised index-finger be cautiously introduced into the mouth of the infant any tooth near eruption may have the thinned gum tissue scraped through by the finger-nail.

CORNEA, Inflammation of.

In the inflammation ending in ulceration of the cornea following phlyctenular keratitis and injuries the first indication is to afford as complete rest as possible to the eye. Atropine should be instilled, but if the corneal ulcer is marginal Eserine is preferable. Both eyes should be carefully bandaged over a padding of lint. When much pain is present hot Boric Acid compresses should be kept over the eyelid after the temporary removal of the bandage, and Belladonna with Glycerin may be smeared over the brow.

Where corneal ulceration is the sequel or concomitant of severe conjunctivitis, bandages must not be employed; the eye should be freely irrigated by a warm 4 per cent. Boric solution or by a 1 in 10,000 Perchloride of Mercury solution after the lids have been treated by Nitrate of Silver solution (2 per cent.).

Where the photophobia is intense a free division of the outer canthus may be made, and counter-irritation or leeches to the brow often afford considerable relief.

Calomel, dusted inside the lids once daily, often acts with great rapidity, and causes superficial ulcers to take up new action and induces rapid granulation. Seldom will Nitrate of Silver be required. In large pustules or sluggish ulcers, a mixture of Cocaine (8 per cent.) with Atropine solution relieves pain and tension, and Mitigated Caustic may be lightly applied to the ulcerated spot with very marked benefit. Better still, after the instillation of Cocaine or the use of a Cocaine disc and staining by fluorescin, a little pure Carbolic Acid may be applied with a fine camel's-hair brush, confining the application strictly to the dried ulcerated spot. This method may even be employed for deep ulcerations of the cornea if perforation do not threaten, and if there be no iritis. Absolute alcohol is sometimes used in a similar way to disinfect the floor of the ulcer. When the ulcer shows any signs of spreading it should be cauterised with the platinum loop of the electro-cautery.

When the acute stage is over, much benefit will be obtained by stimulating treatment. This may be carried out before pain subsides if Atropine be constantly used. The best application is the yellow Oxide of Mercury Ointment, but it is too often used of a strength that aggravates the affection. 8 grs. to 1 oz. Vaseline

is generally strong enough for all purposes, and sometimes half this strength will be found to answer better. A minute portion of the ointment may be inserted inside the lids twice a day, but the effect must be watched carefully, and it should be stopped at once if signs of irritation reappear.

In very chronic cases, a seton *above* the temple or behind the ear, or blisters in the same locality, prove useful. When the ulceration is caused by the presence of granular lids, this condition must be met by proper treatment. (See Conjunctivitis.)

In troublesome, ulcerative, strumous, or suppurative keratitis, Ford resorts to peritomy, on the principle that as the cornea receives its blood supply from the conjunctiva, the local depletion, consequent upon a division of its vessels and of the loops which surround its circumference, tends to promote a healthy reaction and an absorption of stagnant cellular elements. Walker performs perikerotomy, or cutting round the cornea in these cases; he makes a series of short incisions at the base of the cornea.

Shaw points out the necessity, where the ulcer is threatening, of anticipating perforation as the best means of preventing the aqueous humour escaping with a gush and carrying the iris with it. He perforates the floor of the ulcer with a fine knife.

Internal treatment is of the greatest value, and constitutional measures must be employed from the beginning. Thus, in the phlyctenular form as in strumous ophthalmia, the treatment directed under Conjunctivitis must be carried out, and an early change of air and scene is often followed by marked benefit. Special attention should be paid to the feeding of the patient, regular meals at regular hours being insisted on even for the youngest, and all forms of light refreshment between them absolutely prohibited.

When Atropine, Eserine and Cocaine fail to give satisfactory relief to pain, the remedies found useful in neuralgia of the affected nerve may be employed. 5 gr. doses of Butyl Chloral every two hours for 4 doses may be given. 30 grs. of Chloride of Ammonium, or 5 mins. of the Gelsemium Tincture every two hours, may be administered. In severe cases, especially in elderly patients with serpiginous ulceration, the free administration of stimulants with Sal Volatile in Decoction of Cinchona (40 mins. in 1 oz.) must be resorted to. Atropine must be replaced by Eserine where any increase of tension or glaucomatous signs show themselves.

When hypopion forms—*i.e.*, pus appearing in the lowest part of the anterior chamber—if its absorption does not follow upon the continuance of the above treatment, a free incision or an iridectomy must be made under chloroform anæsthesia; if only paracentesis of the anterior chamber be performed the operation will probably require repetition. Subconjunctival injections of Chloride of Sodium (2 to 4 per cent.) and of Cyanide of Mercury, 1 in 5,000, 1 c.c. daily, have been recently extolled, especially

in hypopion cases. Swanzy recommends the application of Dionin and praises the action of finely powdered Xeroform on sloughing ulcers.

Zeigler has drawn attention to the frequency with which corneal ulcer is caused by nasal disease, and the importance of treating this before any permanent improvement in the eye can be expected. The nasal chambers should be thoroughly cleansed, and a swab of lint soaked with Friar's Balsam should be applied to the nasal membrane far back and over the inferior turbinated bone. If the patient is a child, and nasal obstruction exists, adenoids will probably be found, and if found, they should be removed.

Interstitial Keratitis almost always depends upon inherited syphilis, and in addition to the remedies for the relief of pain and photophobia as mentioned above, with subconjunctival injections of Cyanide of Mercury, the internal administration of Mercury must be pushed *short* of producing salivation. After acute symptoms subside, the Yellow Oxide of Mercury Ointment (1 gr. to 1 dr.) should be daily applied.

CORNS AND CALLOSITIES.

These will disappear as soon as the cause is removed—*i.e.*, the friction or intermittent pressure of a tight boot; sometimes, however, owing to the boots being too large, the friction caused by the skin of the foot rubbing against the leather in walking is enough to produce painful corns. Children frequently have their boots made too long, in order to allow for the growth of the foot during the wear of the boot. The result is that they get into the habit of strongly flexing their toes in walking, to prevent the slipping up and down of the foot inside the boot. The result is, corns appear on the upper surface of the phalangeal joints, and deformities of various kinds result which last during life. The first indication in the treatment of these conditions is to obtain properly fitting boots. (See Bunion.) When corns continually grow again in spite of footwear of faultless make, they will be found to originate in the pressure caused by the weight of the foot resting on a hard mattress during sleep, which can be removed by wearing a large bunion plaster at night.

The corn should be pared with a sharp knife, and, if skilfully done, it can be entirely removed at one operation, but this requires skill and much practice. Sometimes previous soaking of the foot facilitates the operation, but many chiropodists prefer to have the corn in its natural hard state before paring.

If the corn cannot be cut entirely out, a little Glacial Acetic Acid may be applied with a bit of wood (the end of a match), and, after the superficial film peels off, the application can be renewed till the diseased cuticle disappears.

Salicylic Acid is the best remedy. It is the basis of nearly all corn cures. It appears to possess the strange property of

only dissolving or acting upon the diseased epithelium, having no effect upon healthy tissue.

The usual formula is—

R. *Acidi Salicylici* 5j.
 Extracti Cannabis Ind. gr. x.
 Collodii Flexilis 3vj.
 Ætheris Sulphurici 3ij. *Misce.*

Fiat solutio. Signa.—*To be daily painted over the corn.*

Soft corns may be best treated by the separation of the opposing surfaces with felt or Amadou Plaster, with a circular hole cut in the centre. This hole may be filled with dry Salicylic Acid, and afterwards the above solvent may be applied to seal up the powder.

Callosities as well as corns and warts can be removed by Rosen's plan: The growth or patch having been well moistened with an antiseptic solution, is thickly covered with Salicylic Acid. Upon the top of this are placed several layers of moistened Boracic lint, and over all a piece of gutta-percha tissue and a bandage. At the end of five days, when the dressing is removed, the thickened epidermis easily peels from the subjacent structures.

Unna treats plantar corns by painting a broad ring of Glycerin Jelly round them with a stiff brush. When the jelly has firmly set, the interior of the ring is filled with a circular piece of strongest Salicylic Plaster (Salicylic Acid, 40; Creosote, 40), and the whole covered up with two layers of glycerin jelly, and when dry a small pad of cotton-wool. This dressing will last for a week, and may be renewed till the horny layer of the epidermis is entirely removed.

Salicylic Acid is much better than any other caustics; Moxas are very painful and Chromic Acid unsatisfactory.

CORYZA—see **Catarrh** and **Bronchitis**.

COUGH.

The treatment of cough as a disease and not as a symptom is a reprehensible practice; the cause should always be carefully sought for first. Even when chest signs and expectoration are absent the diagnosis may usually be easily made. Thus the hacking, short, dry cough of early phthisis may be traced to its cause, should there be a subfebrile temperature, marked loss in body weight, and a bad family history with unfavourable surroundings. In dry catarrh of the bronchial tubes of *large* size, though the writer has seen many such cases where no real or physical sign existed, nevertheless the presence of some small quantity of tenacious or inspissated mucus or muco-purulent secretion at some time or other will be found to clear up the case. The treatment in such a case must include more than mere

sedatives or palliatives. The dry bronchial surface must be stimulated so as to cause the pouring out of a secretion of liquid consistence, after which often the cough practically ceases, as detailed under Bronchitis.

The administration of sedatives and narcotics in a haphazard way in bronchitis has already been mentioned, but the physician must not err in the other extreme, especially as incessant, violent, or spasmodic attacks of cough without any expectoration may in time lead to serious pulmonary trouble.

When the bronchial and laryngeal causes are excluded it may be found that the throat is the seat of the irritation. Acute or chronic granular conditions of the pharyngeal mucous membrane may produce incessant coughing. Elongated uvula, enlarged tonsils, polypi, and other growths at the back of the posterior nares may call for appropriate local treatment.

Reflex cough accompanying catarrhal sore throat is best treated by the following spray, which may also be used as a gargle :—

R. *Acidi Carbolici* ʒj.
 Glycerini Acidi Borici ʒss.
 Aquæ Rosæ ad ʒxij. *Misce.*

Chlorate of Potash, Nitrate of Silver, Alum, or Tannin may be applied, or local sedatives as inhalations of Conium, Friar's Balsam, or Menthol spray may be employed. Cocaine should be avoided.

The ear may be the origin of cough, and unless the diagnosis be correctly made there is little probability of the cough being relieved by drugs. A careful examination will reveal some irritation or foreign body in the meatus. In the case of children, peas, beads, &c., may be found; and in adults, plugs of dried wax. The wax is more likely to give rise to cough if partially loose in the passage, and sometimes the movements of the jaw in eating or speaking may so disturb the mass that cough results at these times. The removal of the foreign body by syringing is generally followed by instant relief.

The advent of each tooth in infants is sometimes heralded by a smart spasmodic cough, which stops when the crown is through the gum, and in older patients the removal of a painful or carious stump has been sometimes followed by the cessation of a cough that has been a source of anxiety for a long time before.

Hepatic inflammation and biliary calculi have been the cause of cough, and in one case known to the writer a bilious attack, resulting from indiscretion in eating, always brought on a severe, spasmodic, barking cough, relieved or removed by a smart purge.

Stomach cough has been long recognised, and yields to remedies which cause evacuation of the gastric contents, or to sedatives like Bismuth, Codeine, or Hydrocyanic Acid.

A severe cough may usher in an attack of gout, which is relieved

when the paroxysm localises itself, and the presence of foreign irritants in the intestinal canal—as round-worms, fruit seeds, &c.—may cause cough in children, which yields to a smart purge.

Hysterical cough should be treated by antispasmodics like Asafetida and Valerian.

Spasmodic or reflex cough, arising from almost any cause, is always benefited by large doses of the Bromides, especially by the Bromide of Ammonium. Chloroform, in moderate doses (5 mins.), is a powerful sedative in most cases, and Chloral Hydrate, in small oft-repeated doses, will allay cough when the cause cannot be removed. Gelsemium, Grindelia, Conium, and Sanguinaria may be used like Morphia and Codeine, to lessen the sensibility of the respiratory centre. Guaiacol, in full doses, 5 to 10 mins., has been much used in spasmodic cough even not depending upon pulmonary phthisis; and Hydrastis has recently been advocated by several. Phenacetin and the new analgesics are valuable where morphia is contra-indicated, and they can be combined with Bromides. Heroin ($\frac{1}{12}$ gr.) and Dionin ($\frac{1}{8}$ gr.), being less likely to dry up the expectoration, are preferred to morphia and opium. The painful cough of pleural inflammation may be relieved by strapping the chest and administering sedatives like the above.

The barking cough of puberty occurs in over-fed or too-often-fed children, and Sir A. Clarke insisted upon a simple but liberal dietary of three or at most four meals a day, active outdoor exercise, and early hours. Locally, he used Glycerin of Borax with Oxychloride of Bismuth and Morphia brushed over the whole interior of the throat after each meal and at bed-time. Internally, he used the Syrup of Bromide of Iron and Quinine, with small doses of Arsenic. When this failed he gave a pill containing Reduced Iron, Valerianate of Zinc, Belladonna, and Nux Vomica, pushed till the physiological effects of the Belladonna became evident.

CRAMP.

The most common form of this condition is the intensely painful tonic spasm which usually affects the leg or thigh muscles. Smart friction may be employed over the contracted muscle, and, by a voluntary effort, the opposing muscles may be thrown into firm and prolonged action, which soon relieves the spasm. By tying an elastic band, like Esmarch's, tightly round the thigh, sometimes the cramp yields at once. If it occurs when in the recumbent position, immediate relief may often be obtained by assuming the upright posture. Often the condition is the result of over-fatigue of the affected muscles, which must be met by rest, and where toxæmia, owing to deficient elimination of effete products is the cause, agents like Salicylates and Massage are beneficial.

For the craft-spasms see under Writer's Cramp, &c. See also Intermittent Claudication and Tetany.

Cramp often affects the muscles of the swimmer in the water, but, contrary to the universally accepted theory, it is seldom if ever serious. The writer in his "Practice of Medicine" (vol. i., p. 250) has shown that the so-called cramp which often terminates the swimmer's existence has nothing in common with this condition; it is of the opposite nature, being due to a general paralysis showing itself suddenly in the total inhibition of all voluntary motion akin to that which sometimes seizes public speakers. The reason why this affection has hitherto been believed to be the result of a tonic muscular contraction is probably due to the fact that few who have been seized with it have survived to explain their sensations. It is beyond the reach of any treatment, though the condition will rapidly pass off once the swimmer has been rescued from his perilous helplessness.

CRAW-CRAW.

The treatment of this troublesome African disease of the skin which causes extreme itching is so easily effected by the application of Sulphur Ointment that its pathology has been accepted by many as identical with scabies, though Manson believes it to be the result of a species of filaria. The utmost cleanliness and the use of the agents suitable in ordinary itch will usually, as in Uganda, be found successful in removing the disease.

CRETINISM.

The treatment of this condition is to be carried out upon the same lines as that of myxœdema, and the sooner thyroid feeding is commenced the better as regards both the mental and physical development of the child. There is some difficulty in determining the correct dose, but any case may be commenced in the infant with a dose daily of 1 min. of the liquor or $\frac{1}{4}$ to $\frac{1}{2}$ gr. of the dry extract; if much increase of pulse-rate, or if the loss of weight becomes very marked, the dose may be lessened. The thyroid may be increased in any case till the low temperature, so often noticed, comes up to the normal and keeps there, and generally speaking 5 mins. daily need not be exceeded.

The remedy may be safely given under close supervision in full doses till the body weight falls to what should be the normal for the child's height; then it begins to rise again, when the dose may be reduced to what will keep the patient in a condition of health—this will be found to be about a 1 gr. dose of dried thyroid every day.

Even in cretins of 20 years of age improvement may be soon visible, and the dwarf stature, which had remained stationary for many years, begins to alter, so that after 12 months an increase in height of 6 or more inches may be noted. The dry skin desquamates, and the new skin retains its moistness, and in a few months the features become altered; their thick coarse texture changes, and they become sharp, and the expression lively and

pleasant. The improvement in the mental condition is generally surprising as the cretin gradually rises to a higher moral, intellectual and physical level, but it is too much to expect that the mental development will proceed equally with the physical when the remedy has not been commenced till the child has already reached the age of puberty.

The thyroid feeding must be continued all through life, and Murray calculates that 1 dr. of the B.P. liquor or 10 grs. of the dry powder are sufficient for the weekly intake of thyroid in adult individuals to supply the absence of the normal gland; these doses should be evenly spread over the days of the week.

CROUP.

Several distinct affections are still grouped under this title. *Laryngismus Stridulus* (a true spasm of the glottis usually occurring in rickety children) has its treatment detailed under its own heading. *Membranous Croup* or *M. Laryngitis*, formerly known as True Croup, is now universally regarded as of diphtheritic nature, and its treatment will be discussed under Diphtheria. The present article deals solely with the treatment of *spasmodic croup*—an affection whose pathology is that of a slight catarrhal inflammation of the larynx, which induces spasm of the laryngeal muscles in young children, coming on suddenly, generally during the night, and manifesting itself in lividity and dyspnoea with hoarse cough and crowing.

The affection, though more sudden and alarming than true diphtheritic laryngitis, yields speedily to simple treatment. A smart emetic, 5 grs. of the powder or 1 teaspoonful of the wine of Ipecacuanha, should be given every 15 or 20 minutes till free vomiting is produced. Some physicians prefer Tartar Emetic ($\frac{1}{8}$ gr.) or the old-fashioned Mercuric Sulphate or Persulphate in 1-gr. doses.

The purely local emetics, as Zinc Sulphate, Alum, Copper Sulphate, or Mustard, are contra-indicated, as the after nauseating expectorant action of the remedy is requisite to establish and maintain free secretion from the laryngeal mucous membrane, but they may be used in emergency as tickling of the fauces may also be resorted to.

The following mixture is more valuable than either of its active ingredients when given alone. It may be given to a child one year old :

R. *Vini Antimonialis* ʒiij.

Vini Ipecacuanhæ ʒiv.

Syrupi Scillæ ʒiv.

Aquæ Destillatæ ad ʒij. *Misce.*

Fiat mistura. Signa.—"A teaspoonful every 15 minutes till vomiting occurs, then half a teaspoonful every 2 or 3 hours whilst the cough lasts."

The symptoms of laryngeal spasm generally rapidly subside after the establishment of free emesis. It will be found wise to continue the use of expectorants for a few days longer, to keep the child well clad and confined to the sick room, the atmosphere of which should be warm and moist, and due precautions should be taken against future attacks, which are apt to be easily induced by even mild attacks of catarrh from exposure to cold and damp.

Before the action of the emetics, the child may be plunged into a warm bath containing a spoonful of mustard, and after being rubbed dry and placed between blankets a hot poultice may be applied round the throat, or Graves's method may be tried of applying a sponge squeezed out of very hot water, and kept in close contact with the laryngeal and tracheal region, and renewed every few minutes till thorough reddening of the skin be produced.

Nitrite of Amyl may be inhaled in urgent cases where swallowing is difficult, or half a minim of Nitroglycerin may be placed on the tongue with a little sugar.

Where the laryngeal cough and hoarseness do not pass rapidly off there is sure to be a catarrhal condition of the membrane, and steam inhalations or the bronchitis kettle should be used, and it is needless to say that the serum treatment should be undertaken without delay if there be a suspicion of the presence of the Klebs-Loeffler bacillus. The nares should be examined for adenoids when the attacks recur in older children; exposure to cold and damp must be avoided. As a preventive of attacks Hutchinson recommends a small dose of Antipyrine or Chloral at bed-time for a few nights after the attack.

CYANOSIS.

This is a common sign of obstruction in the air passages preventing access of oxygen to the blood, and its treatment will vary with the nature and site of the obstruction. Thus the profuse secretion of bronchitis must be expelled by emetics, and œdema of the lung substance relieved by blood letting and purging, after which Oxygen inhalations should be resorted to. In the cyanosis of heart disease, in addition to Strychnine and Digitalis, the right heart may require relief by opening a vein. Tumours pressing upon the larynx when these cannot be removed will require the operation of tracheotomy to permit access of air to the lung.

The cyanosis which in some individuals follows the administration of antifebrin, phenacetin, antipyrine, sulphonal, or chlorate of potash usually rapidly disappears upon cessation of the drug expedited by hot alcoholic drinks and cardiac stimulants and oxygen.

The enterogenous forms of cyanosis are believed to be the result of the production of sulphuretted hydrogen in the intestine, causing sulphæmoglobinæmia, or of diarrhœic conditions in which the blood becomes charged with nitrites manufactured in the intestine, and after absorption causing methæmoglobinæmia.

These states are allied to the microbic cyanosis described by Gibson and Douglas in which a microbe resembling or identical with the *Bacillus coli* was found in the blood. The treatment of these forms of cyanosis resolves itself into the administration of intestinal antiseptics and purgatives and the use of a milk diet, which speedily stops methæmoglobinæmia.

CYSTITIS—see Bladder, Inflammation of.

DANDRIF—(Seborrhœa Capitis).

No form of treatment is of any use till the scalp has been thoroughly cleansed and all scales removed. The best cleansing agent is Borax, which should be used as a soap is used and rubbed into the skin with water, raising a lather. A solution of green soap in alcohol is also used, but whatever cleanser is employed it should be thoroughly washed off the scalp and from the hair by changing the water two or three times. The washing operation should be repeated every fourth or sixth day according to the severity of the case, or between the washings the scalp may be cleaned by the application of Benzine which effectually removes all crusts.

The disease is almost universally regarded as of a parasitic nature, and hence the basis of all modern treatment consists in the application of germ-destroying agents, though in mild cases the old method of applying any bland oil to the scalp was also beneficial probably by inhibiting the growth of the morococcus organism in the very dry form of the disease.

Sulphur is the most reliable routine antiparasitic agent since it can be fearlessly used owing to its freedom from danger. Vidal recommended the following pomade :

R. *Sulphur. Præcip.* ʒiij.
 Olei Theobromatis ʒv.
 Olei Ricini ʒix. *Misce.*

Salicylic Acid possesses the advantage of being less unsightly and more cleanly ; but the B.P. ointment (2 per cent.) is too weak. At least 20 grs. to 1 oz. vaseline should be used, and this may with advantage be combined with an equal amount of sulphur, the ointment being well rubbed in with a piece of flannel into the scalp. It is a good plan to occasionally use a spirituous solution of the acid (4 per cent.) for cleansing purposes when the ointment cakes upon the skin, and Walker adds 4-12 per cent. of castor oil and uses the solution as a spray.

The affection often ends in baldness, and during the later stages of the seborrhœa treatment the remedies for alopecia may be combined with the antiparasitic agents (see under Baldness).

For seborrhœa attacking other parts of the body the Sulphur and Salicylic Acid ointment should be applied in about 2 per cent. strength or preferably used as a lotion.

DELIRIUM.

The appropriate treatment of this *symptom* will be referred to when considering the treatment of the different fevers and diseases upon whose presence the delirium depends. (See particularly under Typhoid Fever and Mania, Acute.)

Acute Delirium or Acute Delirious Mania with feverish symptoms is generally fatal. Its treatment, like that of acute mania, can only be attempted in an institution fully equipped for the treatment of insane patients. Before the removal to the asylum the utmost care should be bestowed upon the feeding, which in most cases must be forced by the use of the rubber stomach-tube. (See under Mania.)

DELIRIUM TREMENS.

The first step in the treatment must be the removal of the patient to a quiet room, under the strict supervision of one or two experienced nurses. For male patients the female nurse should always have the aid of a reliable male to assist her, and where trained male nurses are procurable their services should always be preferred to females. Often the patient's surroundings are such that removal to a properly regulated hospital, where suitable provision for such cases is provided, is the only course open to the physician to recommend in violent cases. The room in which the patient is to be confined while the active stage lasts should be as free from noise and disturbance as possible, and attention should be given to the window fastenings, and all removable furniture and objects which might become formidable weapons in the hands of a delirious patient should be placed outside his reach. Though the great majority of the subjects of an attack of delirium tremens betray no evidence of suicidal or homicidal tendencies, the writer has encountered many instances of the contrary during a prolonged residence in hospital, where such cases were common. He has witnessed and experienced several hair-breadth escapes from their violence, whilst they were labouring under the delusion that the nurse or attendants were the hated objects which the hallucination of their disordered vision had conjured up. When the very first symptom of the disease shows itself the patient must be regarded as insane, and should never for one moment be left alone. The room should be kept in comparative darkness, and it will be well if the patient can be kept in bed. Much will depend upon the tact of the nurse, who may be able by humouring the patient to keep him quiet and at rest. Violent and repeated struggles may be caused by an indiscreet and quick-tempered nurse, and may have a serious influence upon the patient's chances of recovery in bad cases.

As a rule, forcible restraint will not be often called for, and the nurse should be made to understand that it is much easier to keep a patient upon his back in bed by gentle persuasion and mild

restraint than to allow him to once get up and initiate a struggle, when considerable force will be necessary to get him again into bed. Where this method fails with a restless patient a sheet may be so tied across the bed or tucked in that his movements will be considerably hampered. The straight-jacket—rightly regarded by every physician with disfavour—must in rare cases be employed; and the writer has seen it induce rest and calm, without which the patient's struggles could not have been subdued, and death from exhaustion would inevitably have supervened. Such cases are, however, rare, and are no justification for the coarse or cruel abuse which sometimes may be noticed at the hands of untrained nurses or attendants.

The physician should insist that save one relative or friend who may have the right of passing in and out of the sick-room all visitors must be strictly forbidden, and the most complete rest and quiet made to prevail.

Food should be administered with regularity, and it should be of the most sustaining and stimulating kind. Solid food, owing to the state of the digestive organs, cannot be taken. Strong soups, beef tea, beef essences, and beef jellies, with an unlimited supply of milk, should form the diet of a patient during the acute stage of the disease. Feeding by the nasal tube and *per rectum* may be demanded.

Attention to these measures will safely carry a large majority of patients through their attack, and without any narcotics or hypnotics; upon the third night or fourth morning the patient, exhausted and wearied by his restless movements, falls into a natural slumber of variable duration, from which he generally awakes comparatively well and free from hallucinations.

To properly treat the disease in all cases, the physician must keep this spontaneous tendency towards recovery always before his mind. Many cases, nevertheless, will demand some further therapeutic measures, and few instances will occur in which some of the distressing symptoms may not be removed or modified by judicious administration of medicine.

ALCOHOL.—The first question which the physician must decide is the one of alcoholic stimulants, and, as mentioned under Alcoholism, the popular prejudice is strongly against the withdrawal of the patient's favourite beverage. In many instances it will be found that he has already ceased drinking just before or soon after the first symptoms of the affection have declared themselves. The distaste for alcohol is often the first symptom of the disease. The physician may be certain that in the great bulk of cases alcohol will do no good, and in very many, especially in young subjects in their first attack, its administration will do harm.

With older patients the case is different, especially those who have taken alcohol for long periods, and in whom symptoms of pneumonia or of cardiac failure manifest themselves. Here

alcohol must not be withheld unless at great risk ; but such cases are comparatively rare, and even in them the alcohol should not be started at the very beginning of the attack. When there is dyspnœa, pallor of the face, or lividity, or any approach to symptoms of syncope, with failure of pulse, alcohol must be given freely, in conjunction with large diluted doses (1 dr.) of Spirit. Ammon. Aromat., and Strychnine hypodermically.

HYPNOTICS.—The use of sleep-producing drugs in delirium tremens is the next serious question. There cannot be a doubt but that some cases would be better without them all through the attack, and it is equally certain that they should not be given in any case at the beginning. It appears probable that a patient who would not fall into natural sleep till about the fourth night if left alone, will not be sent to sleep by narcotics *much sooner*. It is also highly probable, where sleep has followed the use of a narcotic in the early stage, that the case has chanced to be one of those mild forms of the affection which would have terminated in sleep if left to itself. Should hypnotics then be administered at all in delirium tremens ? The answer to this question must be in the affirmative.

Even a very short curtailment of the period of excitement in bad cases may save life, and one cannot help reflecting, after witnessing the death of a patient, say upon the fourth day of a restless and exhausting delirium, that had sleep been induced by any means, even by Chloroform, a short time before the fatal termination was due, a different result might have been obtained. Had the patient lived for another hour, possibly sleep might naturally have occurred, and the question in such serious cases is, can sleep be artificially induced at even a brief period before it naturally might fall due ? This seems so highly probable that one must be undertaking a very serious responsibility who would withhold all narcotics or hypnotics from a patient sinking from the exhaustion caused by a restless delirium and want of sleep.

It must also be remembered that drugs like the Bromides and Hyoscine, even if they fail to induce sleep, may nevertheless quiet nervous excitement, and husband the strength of the patient.

Nevertheless, it must be remembered that many deaths have been attributed to the free use of the narcotic, and that Wilks stated he had seen many cases of delirium tremens sent to their last sleep by opium. With this statement all observers would agree had Wilks spoken of chloral instead of opium ; but the physician may find himself placed in a grave difficulty, when dose after dose of narcotic fails to induce sleep in a patient apparently sinking from the exhaustion which sleep would soon banish.

The knowledge that owing to the state of the digestion and absorptive powers these doses may lie in the stomach or intestines

unabsorbed for a time, and then may all rapidly enter the circulation at once, adds to the difficulty of his decision ; hence solid opium should never be administered in this condition, and hypodermics of morphia are certainly preferable even to liquid preparations given by the mouth. It seems highly probable that an hypnotic even when given before natural sleep is about to occur renders this more prolonged and refreshing and tends to hasten recovery, but when the judgment of the physician leads him to believe that a moderate hypnotic will be beneficial in a given case, he should not, however, think of giving it sooner than 24 or 30 hours after the onset of the symptoms.

Early restlessness and activity may be to some extent benefited by full doses of Bromides, though they fail to induce sleep, and there can be little objection in carrying this routine out by administering the following mixture :

R. *Sodii Bromidi* ζ iv.
 Tr. Nuc. Vomicae ζ j.
 Tr. Capsici ζ ij.
 Liq. Ammon. Acet. ζ iiij.
 Aquæ Camphoræ ad ζ viiij. *Misce.*

Fiat mistura. Cpt. ζ ss. quartis horis.

Chloral is the most dangerous of all hypnotics, though this was the drug considered by Anstie to have the power of cutting short the disease, and the drug for which he thought there was a marked tolerance in delirium tremens. The writer has seen it tell with fatal rapidity upon the heart in this disease, and he has long since ceased to prescribe it. Chloralamide and other Chloral compounds are not so treacherous, but they must be given with caution.

40 mins. Liqueur Morphiae or Tr. Opii may be given about the ordinary sleeping hour of the patient upon the second night of his attack, and if sleep does not follow it should not be repeated till the early hours of the morning, and not again till bed-time the following night. Should the state of affairs be the same upon this night as upon the second, one dose of 30 mins. may be given early upon the fourth morning. If sleep does not supervene by the fourth night (say 72 hours after the onset of the disease), the situation will become serious, and the full dose may be again repeated, to be followed by 20-30 mins. every four hours till sleep comes on. Should excitement follow each repetition of the opiate, its administration should be suspended, and it has been long observed that rapid improvement often follows one or two doses of Tartarised Antimony ($\frac{1}{8}$ - $\frac{1}{4}$ gr.), or the Hot Pack may be tried. This latter agent often helps the patient to fall asleep in mild cases without resorting to hypnotic drugs : the hot or warm

bath is, however, contra-indicated in the disease. Cold affusion may be employed when all hypnotics fail, but it should only be resorted to in robust subjects and is especially valuable where there is any rise of temperature.

A smart purge should be given before beginning the opiate treatment, and if the physician suspects that the remedy is not being absorbed, he may give a corresponding amount by the hypodermic needle when the next dose falls due in 4 hours.

Wood states that the combination of chloral and morphia far exceeds in efficiency and general applicability all other hypnotics, though some physicians believe that this combination is more dangerous than full doses of either drug when given separately.

A 90-min. dose of Paraldehyde is the safest of all hypnotics; Sulphonal and Trional, in 30-gr. doses, have been used to great advantage, and many physicians are content to treat all cases with one or other of these drugs; they are, moreover, perfectly safe in the above-mentioned doses.

When the delirium has been fierce and exhaustive, Hyoscine hypodermically ($\frac{1}{100}$ gr.) has been tried as a hypnotic, and has given splendid results.

Ranson and Scott, after an investigation of over 1,000 cases, state that Veronal was the only hypnotic drug which did not increase the mortality of the disease. They found that in the early restless stage it often cut short the attack and that in the delirious stage it alone of all hypnotics should be selected. In the early stage the veronal was given with ergot and whiskey at regular intervals.

Digitalis has been advocated in very large doses, and it is rather surprising to find that a heavier mortality has not been reported after doses of 240 mins. of the tincture every 4 hours. These heroic doses have unfortunately been followed by some dangerous symptoms which may have the effect of preventing the administration of the drug in delirium tremens. It is, in reasonable doses, a most valuable remedy where there are signs of cardiac failure, but to be of use it must be given early, as the slowness of its action, which is often overlooked by physicians renders it of little use in *sudden* failure of the cardiac muscle.

Strychnine acts much more quickly, and has an antagonistic action to alcohol. (See under Alcoholism.) The Tincture of Nux Vomica may be given in doses of 15 mins. every 4 hours with 10 mins. of Tincture of Digitalis, and, where cardiac failure threatens seriously to cut off the patient, in addition to the free use of Whiskey with Ammonia, as already mentioned, it is a good practice to give a *large* hypodermic dose of Strychnine ($\frac{1}{12}$ gr.), which may be repeated in 3 hours. Hot Mustard poultices to the cardiac region and spine should be used at the same time.

The following is a good formula for use when the restless delirium is severe and the heart is showing signs of failure :

R. *Hyoscine Hydrobrom.* gr. $\frac{1}{15}$
 Liquor. Strychnine Hyd. ʒj.
 Tinct. Digitalis ʒiss.
 Tinct. Card. Co. ʒiss.
 Aquæ ad ʒvj. *Misce.*

Ft. mist. St. ʒss. tertiis horis.

Capsicum, in 20-gr. doses, has been advocated as an hypnotic ; it is unreliable and may produce gastritis, though some authorities employ it in the presence of acute gastric disturbance.

Uræmic convulsions may occur from renal disease ; they should not be mistaken for epileptic seizures, which also often occur. A convulsion coming on, accompanied by a large amount of albumin in the urine, should be promptly treated by Saline purgatives and a Hot Mustard pack, and Morphia being only used with great circumspection.

Pneumonia is especially serious, and complications, as they arise, must be treated upon the general principles mentioned under the head of each. As a rule, they are an indication for stimulants.

When the disease follows an injury or accident in intemperate and irregular living subjects, as is very common in the surgical wards, it generally turns out a grave affection. It may come on with alarming rapidity, and it is the writer's experience that the delirium in these cases is often of a more active and dangerous kind, and free stimulation is much more frequently indicated in this group of cases than in the ordinary medical varieties of the disorder ; this is especially true when erysipelas or other septic condition complicates the accident.

DEMENTIA.

The treatment of dementia secondary to severe mania, melancholia and other forms of insanity is practically hopeless. Though a cure is not to be expected much can be done by education of the patient in some simple employment which tends to prevent further mental deterioration, and the routine of a carefully conducted asylum affords the best means of carrying this out.

When the primary attack of mental disease has been mild or of short duration and the symptoms of dementia are in their early stage, much may be done by a complete change of environment and a generous dieting.

The food should be given in the liquid form, and, practically, in unlimited amount. By the India-rubber tube of the stomach

pump, 6 to 8 pints of peptonised milk may be put into the stomach daily when there is difficulty in getting the patient to eat, and rectal feeding may be resorted to.

Massage is of much value, but this should only be attempted when the forced feeding is being freely carried out. Thyroid feeding has occasionally proved successful by making a profound impression upon the general metabolism, and where the disease arises in the progress of myxœdema this remedy will give often surprising results.

Malt Extracts, Cod-Liver Oil, Iron, Quinine or Bark, with Dilute Nitro-Hydrochloric Acid, or other tonics may be given with advantage. Stimulants may be freely given at first till the activity of the alimentary canal and the nervous system be roused from its torpor by the increased nutrition. The patient's body should be enveloped in thick flannels, and artificial warmth is almost always required.

The constant current, 20 Leclanché cells, may be applied to different parts of the body for a period of 15 minutes twice daily, and Static Electricity has a powerful influence over the general nutrition.

In primary dementia, treatment is more satisfactory. In the premature type of the disease (*Dementia Præcox*) usually the result of excessive brain work with worry and insufficient food, total change of environment, with complete rest of body and mind and open-air treatment such as the phthisical patient improves under in a sanatorium, will often restore the mental powers speedily. With the feeding which may have to be forced, massage should be combined and the patient kept in bed. Saline purgatives should be judiciously administered and the intestinal tract kept in the healthiest possible condition by the use of intestinal antiseptics or lavage of the colon to minimise the formation of any toxins.

DENGUE.

Up to the present the treatment of this tropical disease remains entirely symptomatic. The patient should be sent to bed and fed on liquid diet, and as in ordinary short febrile affections he may have a simple diaphoretic mixture preceded by one smart purge.

Quinine, Antipyrine, and Salicylates have been all tried, but possess no specific influence over the disease: the high temperature should be met by sponging, or cold packs. Severe excruciating pain can only be effectually relieved by Morphia hypodermically, and this should be combined with Atropine ($\frac{1}{200}$ gr.).

After the subsidence of the acute symptoms, Iodides are valuable, though generally antirheumatic remedies afford little relief to the arthritic complications, but joint stiffness and tenderness may be relieved by Chloroform and Belladonna Liniments.

DENTAL CARIES.

This is due to microbic action, hence preventive treatment will consist in thorough cleansing of the mouth at least twice a day and the use of a local antiseptic. Odolol in alcohol makes the most reliable of washes ; it splits into salicylic acid and phenol in contact with the alkaline saliva and renders the mouth aseptic, a few drops being used on the wetted tooth-brush. Oil of Cloves inserted by pushing a thin wooden tooth-pick moistened with it between the teeth and Formamint tablets slowly dissolved in the mouth are also highly efficient. Dental caries is greatly facilitated by the free use of sugar and starch, and many cases are evidently caused in children by the habit of constant indulgence in sweet-meats. Baker's fine white bread is answerable for the increase in decay of the teeth being directly proportional to the perfection of the process in milling wheat into flour.

The pain of dental caries may be relieved whether this be due to disease of the dentine or exposure of the pulp by gently removing the softened dentine, and after drying the cavity with cotton-wool a small pledget of wool soaked in Carbolic Acid, Creosote or Oil of Cloves should be loosely packed without pressure into the cavity and renewed every six or twelve hours. When the pain has been relieved and the cavity thoroughly disinfected an attempt should be made to save the tooth by stopping with metallic filling. When the above measures fail extraction must be resorted to, but even in cases where the infection has extended through the apical canal of the tooth producing alveolar abscess and periodontitis the tooth may often be saved by a skilled dentist.

DENTITION, DISORDERS OF.

Under this heading the treatment of the irritable condition which often accompanies the eruption of the teeth in infants will be briefly described. Formerly nearly every symptom of illness occurring in a child at this period of its life was put down to teething ; at present the opposite view is so strongly maintained that many regard the subject as practically outside the sphere of etiology, pathology, or treatment. Certainly the one view is quite as erroneous as the other. Owing to the activity of the developmental changes occurring in the nervous system of the infant from the middle of its first year of life till the end of the second year the nerve centres are in a state of more or less unstable equilibrium, and it is a well-recognised fact that comparatively trivial causes may excite a general convulsion or determine severe febrile, sensory or peripheral disturbances. The close anatomical connections existing between the nerve supply of the gums and the aural circulation render it almost certain that when the gum tissue becomes swollen, inflamed and tender, severe reflected aural pain and general distress may arise.

There are few clinical phenomena more marked than the symptoms of relief to pain, feverishness and extreme restlessness, which often follow rapidly upon the scarification of the swollen gum tissue in such cases, though it may be justly doubted that any such effect follows when the local inflammatory signs are entirely absent over the crown of the tooth near the period of its eruption. Hence whilst the use of the gum lancet has been in the past grossly abused its relegation to museums of antiquity is still a far-off event. The subject has already been referred to under Convulsions (p. 196). In most instances the indications for incising the gum may be met with by scraping the swollen tissue with the scrupulously sterilized finger-nail till the crown of the tooth is reached, a practice which effectually prevents the formation of tough cicatrices.

The abnormal sensitiveness of the nerves of the mouth and of the ear, as well as the instability of the motor and other centres, may be controlled or lessened by the judicious administration of harmless drugs. Opium should never be employed for this purpose; its action leaves the peripheral and central nervous apparatus more susceptible than before its administration.

Before the employment of sedatives a smart purge should be given, the best being $\frac{1}{2}$ gr. of Calomel or 1 gr. Grey Powder administered in half a teaspoonful of Syr. Senna, or a teaspoonful of Castor Oil may be given.

The best routine drug is the Bromide of Sodium, which may be combined when the motor irritability is marked, with minute doses of Chloral Hydrate. Antipyrine is often used, especially when marked febrile disturbances are present, but it is not so safe as the next-mentioned agent.

Nitrous Ether has a decidedly beneficial effect; its soothing influence depends upon its power of causing dilatation of the small vessels. It appears to do good also in causing the skin to act, and thus relieves the irregular fever so constantly found associated with symptoms depending upon delayed dentition.

Peevishness, restlessness, wakefulness, muscular twitchings, night terrors, vomiting, auditory hyperacusis and other characteristic series of teething troubles often rapidly yield in an infant of about 12 months old to the following simple combination:

R. *Sodii Bromidi* gr. xxxij.
 Chloral Hydratis gr. iv.
 Liquor. Ammon. Acet. ʒiv.
 Syrupi Simplicis ʒiv.
 Aquæ Chloroformi ad ʒij. *Misce.*

Fiat mistura. Sumat ʒj. omni secunda hora.

It is hardly necessary to remark that errors in feeding should be corrected ; most of the troubles formerly treated by the gum lancet were due to intestinal irritation.

DERMATITIS.

The treatment of skin inflammation must depend in every case upon its cause, and when this is removed the condition rapidly subsides under local treatment such as is indicated in the management of a case of simple eczema or intertrigo in its early stages—viz., a bland Ointment like Zinc Oxide or an unirritating drying powder such as Starch, Zinc Oleate, Fuller's Earth, &c.

Most of the cases described as dermatitis are examples of drug eruptions, and this class is known by dermatologists as *Dermatitis Medicamentosa*. It includes not only the inflammations of the skin, resulting from internal remedies like bromides, iodides, arsenic, copaiba, different sera, belladonna, the synthetic coal-tar preparations, &c., but the eruptions which follow the local application of irritants as the primula plant (*obconica*), poisonous rhus, X rays, certain aniline dyes as well as the entire group of rubefacient remedies. (Cash has recently investigated the interesting form of dermatitis which affects artisans engaged in working with East Indian satinwood).

The dermatitis following these agents is to be met by the instant removal of the local irritant or the suspension of the drug which has caused it, and the skin lesion itself should be treated upon the general principles which are indicated in dealing with each type of eruption. Thus for erythematous rashes a dry dusting powder should be used ; urticarial eruptions are best treated by weak alkaline lotions, pustular or vesicular ones by antiseptic ointments, or by astringent lotions containing lead when there is much discharge. As a rule stimulating applications like tar are contra-indicated, as most patients exhibiting the idiosyncrasy have very delicate and sensitive skins.

X-ray dermatitis has of recent years become common. Geyser's preventive treatment consists in the use of a special form of tube made of lead glass with a flat flint glass window which can be placed in contact with the skin which is to be influenced by the rays. Pads of lint soaked in solution of tungstate of soda and dried have proved useful. Operators should protect their hands by the use of thick leather gloves upon which oxychloride of bismuth has been precipitated. When the dermatitis has already appeared it should be treated on general principles by soothing applications.

An ointment containing Menthol and Cocaine relieves the severe pain and smarting. The resulting warts should be excised or rubbed flat with sand-paper ; chronic cases have been treated by Fibrolysin.

Dermatitis Exfoliativa.—The treatment of this cutaneous affection, better known under its first name of Pityriasis Rubra, will be described under Pityriasis.

Dermatitis Herpetiformis, or Hydroa, first described by Duhring and sometimes called Duhring's Disease, is also known under a variety of titles. Treatment is very unsatisfactory. The most reliable local application is Sulphur Ointment (1 in 4), which relieves the itching when freely rubbed in so as to break up the vesicles and bullæ. Ichthyol may be applied when the bullæ are numerous and there is much pustulation. Warm baths are always useful, and the discharge may be controlled by Lead Acetate combined with a weak Tar ointment.

Constitutional treatment is of more value than the local in influencing the progress of the disease. Rest in bed and if possible a total change of environment are necessary. The food should be such as will not likely tend to the formation of toxic products in the intestines; hence a diet of milk or Koumiss is suitable. Since indican is frequently found in the urine J. C. Johnston emphasises the toxæmic theory of hydroa and advocates eliminatory treatment by salines, diuretics, lavage of the colon and the administration of large amounts of water by the mouth.

Arsenic exercises a marked influence over the disease, as it does in pemphigus, and should be always administered as a routine in gradually increasing doses till the limit of toleration is reached. Crocker recommends Belladonna in full doses and Pringle advocates Ichthyol in large amounts.

The intense itching will often demand hypnotics for the control of insomnia and a combination of Chloral Hydrate with small doses of Antipyrine and Atropine is to be preferred to morphia; bromides are contra-indicated.

The above treatment is also suitable for *hydroa gestationis*, the form which appears in the late months of pregnancy.

DIABETES INSIPIDUS.

Though many drugs have been used in the treatment of this affection, and successes unquestionably recorded, nevertheless the drug which benefits one case will have no effect whatever upon the case next presenting itself, and we have no real knowledge of the pathology of the affection. Hence the treatment here mentioned can only be a brief list of the drugs or remedies which have been given, with very decided benefit in some cases.

Electricity has been vaunted, and galvanism has been used in different ways. A strong current is employed, and the best method appears to be by placing the positive pole on the nape of the neck, and the negative over the loins and pit of the stomach, alternately, for four or five minutes at a time. Some physicians have contented themselves with a weak current, and have passed it through the base of the brain; others report improvement by placing one pole over the loin behind, and the other deeply pressed into the corresponding hypochondrium, galvanising each side daily for five minutes. In most cases this treatment has signally failed.

Valerian in large doses was employed by Trousseau. He administered a drachm of the extract three times a day, and in one case he gave 1 oz. daily. The nausea which follows is the great drawback. Ralfe administers 10 mins. Tincture of Cannab. Ind. with 6 drs. Tr. Valerian and 30 grs. Bromide at bed-time. Valerianate of Zinc in 10 gr. doses may be given in capsules, but it is doubtful if it has any valerian-like action.

Antipyrine has been reported as markedly successful in several cases. It should always have an early trial. The daily dose should begin with 30 grs., steadily increased till 60 grs. are reached.

Ergot is used by many as a routine treatment in full doses, and Nitroglycerin has been favourably reported upon. Suprarenal Extract has disappointed expectations. The writer has tried it without the least benefit. Amylene Hydrate, in doses of about 1 dr. at night and Paraldehyde have their advocates.

Roberts, noticing how often the disease was relieved by the presence of some intercurrent inflammatory affection, was led to apply a large blister to the pit of the stomach with some benefit.

Morphia, Opium and Codeine generally do harm, but in a few cases they have proved useful. Iron, Strychnine, Gallic Acid, Creosote, Alum, Belladonna, Muscarine, Pilocarpine, Cream of Tartar, Nitre, Salts of Silver, Mercury, Arsenic, Zinc and Gold, Bromides, Iodides, Permanganate of Potash, and many other drugs have been at times found useful in diminishing the amount of the urine. Some cases are upon record where, after failure of all drugs tried, rapid improvement has followed a change of air to the seaside.

Warm clothing should be insisted upon, and the general health carefully looked after, signs of emaciation being treated by Cod-Liver Oil, and the usual remedies applicable in the treatment of wasting diseases.

The diet should be generous, with few restrictions; any attempt to reduce materially the intake of liquids causes rapid diminution in the amount of water passed, but produces such intense discomfort and depression that, as a method of treatment, it has to be soon abandoned in each case. Often, however, good is obtainable by a very gradual diminution of liquids till the point is reached at which the bulk of the urine is greater than the intake of fluid, after which the quantity of fluid food is slightly increased. Where phosphaturia exists, Opium and Codeia may be tried for a short period, and then food rich in phosphates may be given, and wholemeal flour is indicated.

DIABETES MELLITUS.

Diet is the most important portion of the treatment; if this be not strictly attended to, drugs will avail little. The main object should be to furnish for the patient a dietary containing the least amount of sugar or starch, or substances easily convertible into sugar. But no two cases of the disease will thrive

best upon an exactly similar diet table, and in this lies the secret of treating the affection successfully. By daily estimation of the amount of sugar voided in the urine, and by weighing the patient at short intervals, the diet may be adjusted from time to time, so as to make life comfortable, and in many cases lead to a complete and permanent cure. The amount of sugar excreted will often convince the physician that some articles can be taken with safety and benefit by one patient which may seriously increase the disease in another; hence each case must be scientifically treated upon its own merits and a routine cut-and-dry dietary is inadmissible.

The question of the treatment of diabetes will be considered first; glycosuria or the presence of comparatively small amounts of sugar in the urine of patients who are passing little over the normal amount of urinary secretion will be referred to later on.

Roberts's method of daily estimating the amount of sugar excreted can be entrusted to any patient of average intelligence. About 4 oz. of the saccharine urine are put into a 12 oz. bottle, and the bulk of a small walnut of German Yeast is added to it. The bottle is then covered with a nicked cork (which permits the escape of carbonic acid), and set aside on the mantelpiece or other warm place to ferment. Beside it is placed a closed 4 oz. phial filled with the same urine without any yeast. In about 24 hours the fermentation will have ceased, and the scum cleared off or subsided. The fermented urine is then decanted into a urine glass and its specific gravity taken. At the same time the density of the unfermented urine in the companion phial is observed, and the "density lost" ascertained. Fermentation is generally complete in about 18 hours, if the locality be sufficiently warm; and it is desirable to remove the two phials into a cool place two or three hours before the densities are taken.

The difference between the two densities—i.e., the density before and after fermentation—will give approximately the number of grains of sugar in each fluid ounce of the urine. Thus, suppose that the unfermented sample by the urinometer registers S.G. 1040, and that the fermented sample registers S.G. 1010, the urine for practical purposes may be regarded as containing 30 grs. of sugar per fluid ounce. By multiplying the total number of ounces passed during the twenty-four hours by 30, the total amount of sugar in grains will be easily obtained.

Before any serious reduction is attempted in the intake of carbohydrates the urine should be carefully examined by per-chloride of iron in order to insure that no diacetic acid is present; should this or acetone or hydroxybutyric acid be present the dietetic change should, owing to the danger of coma, be limited to the exclusion of sugar till the acid disappears.

The urine should be collected for 1 or 2 days before dietetic treatment is commenced in order to demonstrate the degree of severity of the affection. Sugar is then prohibited and carbohydrates restricted, and in a few days entirely stopped. If the

sugar disappears altogether from the urine, after a week or two of this treatment, a little starchy food may be permitted in gradually increasing quantity till sugar returns in order to test the patient's power of assimilating carbohydrates. These should then be systematically administered in amount short of producing glycosuria. Mild cases require no further treatment and the disease may entirely pass away under a properly restricted diet.

If, however, the sugar persists in the urine in spite of the absence of all starch and sugar in the food, the case is a severe one, and will tax the resources of the physician to the utmost. The prohibition of both starchy food and sugar must be still enforced, and proteids may also require diminution. Even in this serious type of the disease if the patient continues to lose weight and if diacetic acid appears in the urine a small quantity of bread must be allowed.

In selecting a diet, the following must be avoided: Vegetables which do not contain chlorophyl in quantity, as Potatoes, Turnips, Cauliflower, Carrots, Parsnips, Sea Kale, as well as Peas, Beans and Lentils.

Fruits—especially all sweet fruits—Grapes, Oranges, Apples, Pears, Gooseberries, Currants, Plums and Peaches, must be forbidden. Lépine thinks Apricots are admissible in most cases as their sugar is chiefly lævulose.

Farinaceous food must be strictly avoided—thus Corn Flour, Baker's White Bread, Biscuits, Rice, Sago, Macaroni and Vermicelli, Tapioca, Sweets, Pastry, Puddings, &c.

Of the articles allowable, nearly every animal substance may be freely partaken of—any kind of Meat, Ham, Bacon, Tongue, Game, Fish, or Poultry; indeed, the only animal products which are injurious and must be avoided are Liver, Honey and Molluscs, though the flesh of the lobster may be safely permitted. In the cooking of animal substances, strict attention must be paid to the avoidance of adding any starchy or saccharine flavouring ingredients to the meat.

Green vegetables, Cabbage (when quite green), Lettuce, Cress, Spinach, Watercress, Celery tops, Endive, young Brussels Sprouts, Spring Onions, Rhubarb, Cucumbers and French Beans (when quite young), and green Artichokes may be allowed in moderate quantities. Almonds and all nuts save Chestnuts may be freely used, and Mushrooms are permissible.

Cream Cheese, Suet, Fat and Oils, Cheese, Cream, Butter and Eggs may be used in quantity. The question of Milk will be considered afterwards. If cream be mixed with a large quantity of water and the mixture allowed to stand, the perfectly pure cream devoid of all lactose can be skimmed off; this added to water, with which the white of an egg has been blended, will form a mixture almost identical with good cow's milk.

The greatest difficulty in the dietetic treatment of diabetes exists in the exclusion of bread, as most patients find it impossible

to swallow a meat diet without the assistance of this article of food. To provide a substitute for it which will contain neither starch, sugar, nor anything easily changed into sugar, and which will at the same time be both palatable and capable of sustaining life, is the great desideratum.

Bran cakes made by Camplin's method, with eggs, butter, and a little milk, are used, and may be obtained from various makers. 6 oz. finely ground bran, $\frac{1}{2}$ doz. eggs, 3 oz. butter and a teaspoonful of baking-powder make a good batter, which should be baked in an oven for 30 minutes.

Gluten Bread, made from carefully washed gluten, in which as little starch as possible is left, is, if made carefully, a tolerable substitute, but its toughness and absence of taste are disgusting to most patients. The writer has had several poor diabetics kept alive upon home-made bread, prepared by themselves from the crude gluten obtained from the starch works. This compound is far from being a proper diabetic food, but, amongst the poor diabetics discharged from hospital as incurables, it is the best that can be done for them. He directs them to take 4 breakfast-cupfuls of the finest bran, and a small teacupful of the best white Indian flour or meal, and rub these up with 6 oz. butter and a teaspoonful of bicarbonate of soda. This mass is then made into dough with the thick part of the washed gluten, which has been left to settle in a pail of water over night. This mass is to be rolled into cakes, and baked in a slow oven for two hours. Gluten flour, as sold, often contains large amounts of starch. Dr. V. Fielden has found as much as 68 per cent. in samples obtained from good houses. Many of the samples of gluten bread contain as much starch or more than ordinary wheaten or brown bread, and the latter when cut in thin slices and thoroughly toasted through and through is undoubtedly much less objectionable than many of the gluten breads, buns, and cakes freely advertised as safe diabetic food.

Almond cakes offer upon the whole the most palatable substitute for white bread, and almond flour is procurable which when freshly prepared and rubbed up with beaten eggs, and a little baking powder added, may be baked in small tins in any good oven without difficulty. Saundby recommends for almond cakes—1 lb. ground almonds, 4 eggs, and 2 tablespoonfuls of milk, and a pinch of salt (or saccharin); the eggs to be beaten up, and the almond flour stirred in, divided into cakes, and baked in a moderate oven for 45 minutes.

Soya bread always contains a considerable amount of starch.

Bread made with flour obtained from the embryo of wheat, after the separation of its starchy endosperm, is recommended by Danype, and is used in France for diabetics, and is said to be very poor in starch.

Aleuronat, Cocoa Nut and Roborat breads are also procurable, and are valuable changes from the gluten and almond feeding-stuffs.

Casein bread is relished by many diabetics who cannot use gluten and almond preparations. It is a good practice to order through the patient's chemist a tin of assorted breadstuffs (biscuits, cakes, rolls, &c.) from a reliable London firm like Bonthron, Callard, or the Protene Co., who also supply non-saccharine jams and jellies, so that the diabetic can not only have a large variety but may find a food which will constantly meet his individual tastes.

Inulin and Lævulose are recommended, and Hale White suggests the use of dahlia tubers boiled as a vegetable, on account of their starch being in the form of inulin.

For beverages Tea, Coffee, and Cocoa made from nibs, may be freely partaken of, sweetened with Saccharin or Glycerin, and containing good Cream. There is little use in trying to diminish the amount of fluid consumed; thirst may be assuaged by acidulated drinks made with Cream of Tartar, Phosphoric Acid, Lactic Acid, or fresh Lemons. A very palatable liquid is made by dissolving a dessert-spoonful of pure Citric Acid in a quart of water, and adding Glycerin to sweeten it according to taste. Sour Buttermilk may be permitted when the amount of sugar is moderately small in the urine. Water charged with Oxygen has been extolled as a beverage and sometimes seems to diminish glycosuria. Alcoholic stimulants should be sparingly used, and, when given, should consist of whiskey, brandy, or Hollands, or light bitter ale like Pilsener. Sweet wines are decidedly injurious.

Donkin's method of treating diabetes consists in an exclusive diet of skimmed milk. About one gallon or more is the daily allowance. This treatment has met with general condemnation. The writer has seen, however, excellent results in obese patients from an exclusive milk diet, and it is invaluable in albuminuric cases. Lépine advises that the milk be fermented, and Hutchinson's sterilised non-saccharine milk can be obtained from Callard and Co.

In poor patients who turn up at hospital, and who may gain admission for a few weeks or even months, when they are compelled to leave and return to their homes, milk is really about the only available safe diet for them. Severe cases of diabetes will, unfortunately, be often found where milk acts most injuriously, but fat patients sometimes do well upon it. In agricultural districts, good buttermilk turned acid is a very valuable diet for the poor diabetic.

Van Noorden's Oatmeal treatment need only be mentioned to be condemned. Janeway found that when oatmeal was given beyond the assimilating power of the patient the whole of the carbohydrate was eliminated in the urine, and the same is true of potatoes.

Great prominence has been given to the craze of treating diabetes by potatoes. The so-called "potato cure" has been

vaunted by many ; as a routine it must be condemned. Many diabetics undoubtedly do well on potatoes given up to the limit of their assimilative power, but the range of their usefulness is limited, and like most of the crazes which appear in connection with the therapeutics of this disease it is the evidence of a tendency of protest against a too rigid dietary.

Too much cannot be expected from a pure dietetic treatment of the disease, and though, now and then, the physician may meet with a severe case where the sugar disappears entirely, nevertheless in young subjects especially, the sugar can sometimes be very little influenced by diet. The physician, as stated before, should aim at supplying carbohydrates in every case short of the degree in which these can be thoroughly assimilated, and there is no doubt that often harm is done by a too strict enforcement of a rigorous dietary, and the excessive use of animal food adds to the danger of acetonæmia.

The hours of work, sleep and exercise should be carefully regulated, and the patient should as far as possible be saved from bodily fatigue, worry, or heavy brain work. Against changes of temperature he should be provided by being well clad in flannel, and should wear thick-soled boots. Gymnastic exercise may be advised, when weather and other contra-indications forbid exposure. Most authorities lay stress upon the necessity of constant open-air exercise, and many recommend cycling and riding, but rest should be strictly enforced in all acute or grave cases, and in the milder types of the disease fatigue should never be induced.

Treatment by Drugs.—Though no substance has yet been discovered which exercises a specific action upon diabetes many drugs are at the physician's disposal which exert some influence over the glycosuric process.

Opium and its alkaloids are the most reliable of these. Crude opium can be tolerated in very large doses. The watery extract, in doses of $\frac{1}{2}$ gr. three times a day, may be started with and the dose need not generally be pushed beyond 3 or 4 grs. Morphine may be employed in proportionately smaller doses. Codeine is less likely to cause disturbance from its narcotic action, being weaker than morphine ; the good which opiates unquestionably accomplish in diabetes is altogether independent of their anodyne properties, and Bruce has shown, when they are exercising their best effects in diabetes, that narcotic symptoms seldom are manifest. Codeine may simply be regarded as weak morphine. Fraser found that the therapeutic value of 1 gr. morphine daily in diabetes exceeded that of 15 grs. codeine. The dose of codeine may commence with $\frac{1}{2}$ gr., increased to 2 or 3 grs., three or four times a day. It will be found not to interfere with digestion, and is always well borne. Under its influence the amount of sugar generally markedly falls in a few days.

Where the codeine treatment with strict diet fails, any of the

following drugs may be tried. The list might be much further lengthened out, as nearly every remedy has got a turn in the management of this serious ailment.

Antipyrine is next in value to opium and its alkaloids, and some observers go so far as to state that it possesses more influence over the diabetic process than these agents. It must be given in full doses, *i.e.*, 5 to 10 grs. 4 or 5 times a day, to be suspended as soon as any albuminuria appears.

Salol, Aspirin, Salicylates, Phenacetin, Antifebrin, Exalgine, and the other members of the same class, appear to have a similar but less certain effect.

Atropine in full doses has recently been highly praised by Rudisch, who found that under its administration larger quantities of carbohydrates could be taken without glycosuria being induced.

Carlsbad Waters drunk freely at Carlsbad, in conjunction with strict dietetic treatment, till the urine becomes alkaline, with or without the opium or morphine treatment, have given satisfactory and lasting benefits in many cases, but the bread substitutes procurable at Carlsbad are very unsatisfactory as a rule.

Vichy, Neuenahr, Fels, Contrexéville, and Vals are favourite resorts for treatment; and it is insisted by those at the places that the drinking of the waters at their source is much more efficacious than undergoing the treatment at home.

Alkalies have been much used, and the good effect of the Vichy, Vals and Carlsbad waters is doubtless owing to their presence. The alkaline carbonates and ammonia phosphate, the citrates of soda and potash and free ammonia, or its carbonate or acetate, have been pushed, but apparently with very little influence upon the amount of sugar. Alkalies and their carbonates are by Ebstein supposed to act by directly supplying carbonates and free carbonic acid to the protoplasm of cells throughout the body.

Saccharin is of use as a substitute for sugar, but here its therapeutic virtues end. Large quantities are liable to upset the stomach, and by leaving a permanent sweet taste in the mouth may destroy the appetite. Almost the same may be said of glycerin.

Strontium, Uranium Nitrate, Ozonic Ether, Permanganate of Potassium and Peroxide of Hydrogen have failed signally in the hands of most physicians. Bromides, Cocaine, Arsenic, Picric Acid, Calcium Sulphide, Lactic Acid, large doses of Quinine, Ergot, Benzosol, Camphor, Magnesium Salts, Lithia Salts, Creosote and Jambul have been reported to have caused cures, but in other hands have almost always proved useless.

Pepsin and Rennet have been used and found wanting, and the same may be said of the plan of giving large doses of Yeast.

Since the discovery of pancreatic diabetes much attention has been given to the action of Pancreatic Extracts and occasionally good results have been reported. Trypsin should always have a trial; it must be given in Keratin coated capsules or pills in order that it may pass unaltered through the stomach. Amylopsin, Pancreatin, and other preparations of the gland may be given in a similar manner. Secretin prepared from the duodenal mucosa is being tried with the view of stimulating the action of the pancreas, but the reports are unsatisfactory.

Massage and Electricity, Cod-Liver Oil, Iron, and Laxatives of the Castor Oil or Cascara type, are generally useful in combating symptoms or complications arising during the disease.

It would appear from a study of the long list of vaunted drugs that many observers, when getting a case of diabetes, place it at once upon a diet devoid of sugar and starch, and any drug which their fancy induces them to try they prescribe, and often fall into the error of ascribing all the good effects to it alone.

Complications arising during the disease are to be treated upon general principles.

Coma should be promptly met by large doses of Alkalies, or the intravenous injection of Bicarbonate of Soda Solution (2 per cent.), or, better still, by large hypodermic doses of saline solution, as mentioned under Anæmia.

Lepine's treatment consists in the intravenous injection of a solution of Bicarbonate of Sodium 600 grs. to 80 oz. water which may be all slowly injected.

In the threatening stage when the patient is still quite conscious he should drink as large a quantity of water as he possibly can swallow, 1 dr. of Citrate of Soda or Potash being dissolved in $\frac{1}{2}$ pint, and many cases are recorded where the stupor has disappeared under this treatment.

Carbuncle, Boils, Pruritus, Gangrene, Constipation, and other complications are to be treated by the remedies mentioned under their appropriate headings. Often neuritis is very severe, and it is best met by Antipyrine.

The numerous dietaries designed by various authorities are all founded upon the principles already detailed. The physician should guard against prescribing a printed "diet roll" for his diabetic patient, as the sameness of the routine unless greatly varied from day to day is sure to become irksome. Better supply him with a more or less complete list of the forbidden and of the allowable articles of diet; from the latter list he can formulate a dish according to his individual tastes. For this purpose Pavy's list is sufficiently comprehensive.

The following articles are allowed :

PAVY'S DIETARY.—Butcher's meat in every form except liver; bacon and ham; game, poultry; all kinds of fish, both fresh and cured, including the crustacea; animal soups (without thickening), including beef tea and broth.

Eggs, cheese, cream cheese, cream, and butter.

Almond, bran, or gluten substitutes for ordinary bread.

Greens, spinach, turnip-tops, watercress, mushrooms, mustard-and-cress, cucumber, lettuce, endive, radishes, and celery.

In moderate quantity, after boiling in much water, are allowed:— Turnips, French beans, Brussels' sprouts, cabbage, cauliflower, broccoli, sea-kale, asparagus, vegetable-marrow; also pickles, olives, vinegar, and oil.

Jelly, flavoured but unsweetened; savoury jelly blanc-mange made with cream and not milk; custard, made without sugar.

Nuts of all kinds except chestnuts.

Tea, coffee, cocoa from nibs.

Dry sherry, claret, hock, dry Sauterne, Chablis, Burgundy.

Brandy and spirits, unsweetened; soda water, Burton bitter ale in moderate quantity.

The following are forbidden:

Sugar in any form, wheaten bread, and ordinary biscuits of all kinds.

Rice, arrowroot, sago, tapioca, macaroni, and vermicelli.

Potatoes, carrots, parsnips, beetroot, peas, and Spanish onions.

All kinds of pastry and puddings, and fresh or preserved fruits of all kinds.

Milk is forbidden, except in very small quantity, and also port wine.

Sweet ales, mild and old porter and stout, cider, liqueurs, and all sweet and sparkling wines.

DIARRHŒA.

The treatment of this *symptom* can only be rationally carried out after its cause has been discovered. Unfortunately the general acceptance of the theory which has bracketed diarrhœa and enteritis as synonymous terms has plunged the subject into hopeless confusion. In the great majority of cases of diarrhœa the frequent loose motions are the result of some purgative substance introduced into the intestinal tract from without, or produced in the bowel through the action of ferments or microbes. It is therefore as irrational to regard the catharsis as a *disease* as it would be to call the pharmacological action of castor oil or senna by the same name. It is worth remembering that drugs employed as purgatives may act merely by exciting peristalsis by greatly increasing the intestinal secretion, by both these ways combined, or by simply retarding absorption of the intestinal fluid normally secreted. If these facts are applied to the clinical study of diarrhœa, the different types of the condition and their treatment will be much simplified, and the unscientific method of treating in a routine manner every case of diarrhœa by pouring in drenches of chalk, catechu and opiates will cease.

Undoubtedly a catarrhal enteritis may supervene when the action of the cathartic agent has been of long standing, and it may even remain after this has been expelled from the body, but such instances are rare except in the case of infants.

The irritant or purgative substance is often the product of

fermentative or microbic action which has already been induced in some article of food as contaminated milk, or it may be a ptomaine poison originating in fish or meat, or the irritant itself may be harmless from a chemical point of view but still be capable by its mechanical action of exciting greatly increased but ineffectual peristalsis as is seen in indigestible masses of casein or accumulations of fæces in the colon.

The term *irritative* diarrhœa, therefore, may be applied to most of the examples of looseness of the bowel met with by the physician, and they follow for the most part some indiscretion in diet, and, especially in adults, may be safely regarded as if the patient had taken a cathartic which was irritating the small intestine, causing sometimes intense griping and smart purging. Such cases will require little treatment, and certainly should not be checked at first. The diarrhœa is nature's method of getting rid of a poison introduced from without in the food, or generated within the bowel, and if the physician must interfere, it may be best to assist nature, and give a mild dose (2 drs.) of Castor Oil, or a teaspoonful of Gregory's Powder. The severe pain is best combated by a large dose of Whiskey or Brandy, or 5 mins. of Oil of Peppermint or other essential oil. Salines, though often employed, are not, in the writer's opinion, suitable in these cases. They may increase the pain, and, by rendering the motions quite fluid, may sweep past and not remove the source of irritation.

The diarrhœa common in infants fed upon cow's milk is clearly of this nature, and the early diagnosis of it will enable the physician to often save life. It can be recognised at once by an examination of the child's napkins, or by a description of them when not available for inspection. The motions consist of masses of undigested curd, closely resembling glazier's putty in appearance and consistence ; these masses can be easily shaken off or detached from the napkin which they scarcely soil. They are often green in colour and are passed solid, with a little acrid watery discharge often mistaken by the nurse for urine. Here the employment of vegetable astringents or opiates means delay, and too often death.

The preliminary colic and diarrhœa may be rapidly followed by vomiting, and if the cause be not promptly removed, a low and fatal form of enteritis sets in which is beyond the reach of drugs. The symptoms are so treacherous that before the physician is summoned this may already have taken place. The cow's milk should be instantly stopped, and a healthy wet nurse obtained. When this cannot be accomplished without delay, which is usually the case, two courses are open. Raw Meat, grated or pounded to a pulp, may be given or made into strong beef tea ; or a peptonised food or predigested milk should be tried. Directions must be given that cow's milk should not be administered till long after the attack is passed, and then only in very small amount, and but once a day at first, watching its effects. It is upon the whole better never to return to it if the attack has been a serious one.

As soon as the child takes to the new food, a smart dose (one teaspoonful) of Castor Oil should be given to clear any indigestible curds out of the bowel. No further drugs are needed in the majority of cases.

Benger's, Nestlé's and Mellin's Foods are very suitable, and Meigs' Milk Cream—which for an infant 6 months old may be made by mixing pure fresh milk 3, cream $1\frac{1}{2}$, lime water 1, sugar of milk $\frac{1}{3}$, and boiled water 2 parts—is an excellent food when cow's milk must be used. The lime water may be substituted by solution of bicarbonate of soda (3 grs. to each oz.) if constipation follows. Wright recommends the addition of 20 grs. Citrate of Soda to each pint of cow's milk, and Variot states that this drug has a specific action in the vomiting of infancy.

Summer Diarrhœa is a different form of the irritative type of diarrhœa, and to which the term "septic" has been also applied; it occurs in young children and sometimes in infants. Here also the milk—generally cow's milk—is at fault, and there can be little doubt that the irritant is a microbe or ferment which secretes a highly poisonous principle, causing profuse and frequent liquid motions, so that severe cases sometimes are described as Cholera Infantum. The affection is rarely met with in breast-fed infants, and the contamination of the milk has been regarded as the result of infection of the liquid by the introduction of such microbes as *Bacillus coli*, *pyocyaneus*, *streptococci*, &c., which are believed to be carried readily by the house-fly.

It is unfortunate that these names are used in different senses by different writers, thus irritative diarrhœa is often called inflammatory. The irritative diarrhœa caused by curds of milk in infants is sometimes spoken of as simple or dyspeptic diarrhœa, but if it passes on into entero-colitis it becomes an inflammatory diarrhœa.

The immediate withdrawal of the milk diet, and the copious administration of ice or iced water with a purgative is the first step in treatment, after which any of the previously mentioned foods prepared fresh every time, or sterilised cow's milk may be given, provided it is clear that prior to the attack there was no evacuation of the firm, dry putty-like masses before described. Castor Oil is the safest purgative in these cases; the following old-fashioned combination is an excellent one, and a child one year old may get a powder twice a day:

R. *Pulv. Rhei* gr. iss.
 Sodæ Bicarb. gr. iv.
 Pulv. Cinnamomi gr. j. *Misce.*

Fiat Pulvis.

Sterilisation of the milk is a reliable prophylactic; the milk can be best sterilised by being heated upon a water-bath in small

bottles for 15 minutes, and all tubes and bottles soaked in a strong solution of Boric Acid. There is no doubt that tuberculous disease is communicated often through the milk of cows with tubercular deposits in the mammary gland, and it is a wise measure to *always* sterilise the milk of bottle-fed children where there is any doubt about the purity of it, or of the health of the animal supplying it.

Chalk Mixture or Bismuth may be prescribed safely as a routine, and the following is suitable for a child of 1 to 2 years when the diarrhœa continues after the diet has been made right; a child 4 years old may have the amount of bismuth doubled and the tincture of camphor trebled.

R. *Bismuthi Carbonatis* gr. xlv.
 Tincturæ Camphoræ Co. ʒj.
 Glycerini ʒss.
 Mucilaginis Recentis ʒss.
 Aquæ Chloroformi ad ʒiij. *Misce.*

Fiat mistura. Signa.—"A teaspoonful to be administered after each loose motion."

Intestinal antiseptics constitute the ideal treatment for this form of diarrhœa, but unfortunately an intestinal antiseptic in the true sense of the word is as yet unknown. Salol, Naphthaline, Beta-naphthol, Resorcin, Creosote, Iodide and Perchloride of Mercury, Salicylates, Aspirin, and perhaps one hundred more antiseptics have been lauded from time to time, but by common consent their local antiseptic action is considered to be useless as regards the lower part of the intestinal tube. The only reliable drug of this class is Calomel, which may be given even to young infants in doses of $\frac{1}{8}$ gr. every hour for 6 to 8 hours with a little sugar; it may be combined with $\frac{1}{2}$ to 1 gr. doses of Naphthol. This treatment is highly successful in checking the foul green motions of most forms of septic diarrhœa occurring in childhood. Illingworth gives small doses of the Biniodide of Mercury dissolved in Iodide of Potassium combined with Chloral.

In the more severe degree of irritative diarrhœa known as Cholera Infantum (probably identical with the Cholera Nostras of adults), the intestinal symptoms are combined with grave constitutional disturbance arising from the absorption of the toxins produced in the intestine which induce high fever, rapid shrinking of the skin and subcutaneous tissues, and the development of collapse and the hydrocephaloid state: the Calomel treatment is the best routine. Hyperpyrexia must be treated by cold sponging or the cold pack, and the tendency towards collapse met by rectal flushing with warm saline Solution and Alcoholic stimulants. Where vomiting is continuous a liberal supply of pure water may be permitted to wash out the stomach,

or this organ may be irrigated through a rubber catheter with a weak solution of Permanganate of Potassium. Strychnine should be given hypodermically ($\frac{1}{100}$ gr.) and Saline Solution injected slowly into the subcutaneous tissue.

Robert-Simon thinks he has demonstrated the remarkable results which may be obtained by the subcutaneous injection of sea water as described under Eczema in all cases of gastro-enteritis in young infants. He states that the dying infant unable to retain food, after a single injection may be seen to digest a normal amount of milk immediately afterwards. The dose of the isotonic sea-water plasma is 30 c.c. injected into the scapular region, no other treatment being usually permitted. The mortality he states is only 2 to 3 per cent. in the salt-water Dispensaries of Paris, where many of the children are brought in a moribund condition.

After the injection of salines has been tried a mustard poultice may be applied over the heart and to the extremities, and the hot bath or wet pack may be resorted to. The main principles of this treatment are applicable to the examples of septic diarrhœas occurring also in older children, and in them Eustace Smith advocates the hypodermic injection of Morphia to check purging and vomiting in the early stage, but this agent must be used with extreme caution, since its administration must tend to facilitate the absorption of the toxins whose elimination by the bowel is nature's method of effecting a cure.

After the successful treatment of the more urgent symptoms of vomiting, fever and collapse, the catarrhal diarrhœa resulting from the prolonged action of the intestinal toxins should be met by a simple local soothing drug like Bismuth used in the form of the prescription upon p. 229.

This combination will also be the most suitable for the treatment of the diarrhœa of infants and delicate young children who suffer from looseness of the bowel after chills or exposure of the surface of the body from injudicious cold bathing carried out under the craze of "hardening" them. This form of diarrhœa is probably of true catarrhal nature, and should be also met by a warm flannel binder and extra clothing.

The diarrhœa of disordered dentition is of reflex type probably caused by increased peristalsis, and is best met by mild sedatives like Bromides.

Lienteric diarrhœa is a type of looseness of the bowels resembling in its pathology teething diarrhœa, the bowel being suddenly emptied when the infant, child or adult partakes of food, the contents of the stomach being swept rapidly down the canal. The best treatment for this is Arsenic, which is administered in liquid form usually with minute doses of Strychnine: in very young infants Bromides may be tried with $\frac{1}{4}$ min. of Fowler's Solution.

A word may be said about the action of Castor Oil in all forms of acute diarrhœa both in the infant and adult. It is a mistake

to regard the good results obtainable by this drug as being due entirely to its eliminatory action ; the pure oil is a local emollient and sedative as proved by its popular use in eczema, conjunctival irritation caused by foreign bodies, &c., in which it is devoid of all irritant action. When swallowed it only acts as a purgative by a small percentage of its bulk being changed into ricinoleic acid in the duodenum ; the unaltered remainder passes down the bowel exercising its bland emollient action on the intestinal tract as it does when instilled into the eye. The recognition of this fact places in the hands of the physician a remedy of the greatest value in the treatment of every form of diarrhœa, reflex, catarrhal, or irritative.

Dec. Aloes Co. has a very striking effect in diarrhœa. It may, in one full dose ($\frac{1}{2}$ dr. to an infant, $1\frac{1}{2}$ oz. to an adult), cause a firm, natural motion where watery stools have been the rule for many days, and it can be administered safely in the worst cases, as a morning dose, when the ordinary astringent remedies are being administered during the day. The writer has occasionally obtained excellent results from this drug after the very acute symptoms have subsided, but its action is very uncertain.

CHRONIC DIARRHŒA.—This usually depends upon a catarrhal condition of the bowel, and is often the sequel of the irritative or septic type when not depending on ulceration of a tubercular origin.

In infants and young children it may be due to feeble circulatory powers with successive attacks of chill, in which case warm clothing, the avoidance of cold bathing, and the substitution of predigested thick foods for cow's milk will usually restore the digestive power and tone of the intestinal tract.

In older subjects the relaxed mucosa will require the stimulus of astringents ; the older preparations consisting of Kino, Rhatany, Catechu, Tannin, Logwood, &c., are usually prescribed with Opiates and Chalk Mixture for this condition, but since the greater part of their astringent principles are absorbed in the stomach they frequently upset gastric digestion without influencing the flux from the bowel, and the same remark applies to the salts of Lead, Copper and Silver.

The best routine remedy for checking the watery motions is a compound of tannin which will pass unabsorbed through the stomach and exercise its local astringent action upon the intestines. Tannalbin, Tannigen, Tannoform, Tannol, Tannyl and Tanocol act in this manner. The writer prefers the first mentioned :

R. *Tannalbin* gr. xv.

Bismuthi Carb. gr. x.

Pulv. Cretæ Ar. c. Opio gr. x. *Misce.*

Mitte tales xij. (*in cachet. serv.*) *1 ter die.*

Lead Acetate, Nitrate of Silver, Copper Sulphate, and Extract of Logwood may be given in pills coated with Keratin and Opium can be administered along with them to restrict the exalted peristalsis always present. Tincture of Coto bark is a favourite remedy with some physicians.

The above treatment is also the most suitable for the diarrhœa of tuberculous ulceration, and in all forms of chronic diarrhœa Rhubarb, Dec. Aloes Co., Castor Oil, or Calomel should be occasionally administered from time to time, the latter drug always being selected when the motions are foul. Salol, Naphthol, or Aspirin may be combined with tannalbin, and carminatives like Cinnamon, Clove and Peppermint Oils may be given for griping.

Diarrhœa due to catarrhal or other state of the colon is to be treated locally and constitutionally as Colitis (p. 175).

Chronic Nervous Diarrhœa is of the same type as the lenteric, and should be treated upon the same principles by Bromides and small doses of Arsenic.

Malarial diarrhœa yields to Arsenic and Quinine, and diarrhœa occurring in the tropics when not of the ordinary irritative type is likely to be dysenteric in origin, and should be treated by Ipecacuanha. A good routine remedy for chronic tropical diarrhœa will be found in a strong decoction of Cinnamon bark administered in conjunction with a diet of well-boiled arrow-root.

The diet in chronic diarrhœa should be such as is indicated in typhoid fever, the object being to give all foodstuffs in either the liquid form or in preparations of thicker consistency containing impalpable farinaceous materials which cannot mechanically stimulate the bowel membrane and increase peristalsis. Peptonisation of the food is necessary in all severe cases to aid its absorption, since owing to the increased peristalsis the food is only a short time in the intestinal canal.

The after-treatment when the flux has been checked should consist of tonics to strengthen the relaxed tone of the intestinal tract. Iron is always valuable when the tongue is uncoated, and minute doses of Strychnine may be advantageously combined with it. A favourite tonic is Aromatic Sulphuric Acid with small doses of Quinine. Should constipation follow the cessation of the flux irritating cathartics are contra-indicated, Castor Oil or enemata being clearly the safest methods of opening the bowels.

DIPHTHERIA.

The *preventive* treatment of diphtheria in epidemics consists in rigid isolation as in scarlatina and other acute infectious diseases. The bacillus can be conveyed in milk or even in the cream or butter separated from infected milk; it is also readily carried by healthy persons coming in contact with diphtheritic

patients, and by cats, cage-birds and poultry. The diphtheritic patient cannot be regarded as innocuous for a period of at least three weeks, or as long as the bacilli can be found in the nasal discharge or throat. The injection of a moderate dose of antitoxic serum (500 units) is a reliable prophylactic whose protection, however, can only be counted upon as effective for 3 or 4 weeks. As the disease has a brief incubation period, a week's quarantine is quite sufficient for the isolation of suspected individuals who have been in contact with diphtheritic patients.

Treatment of the disease when once any membrane has become visible must be instituted without a moment's unnecessary delay. Statistics demonstrate conclusively that the mortality of the disease increases with every fraction of a day's delay, and even in the mildest case the physician cannot be held as blameless who postpones injection unnecessarily once the diagnosis has been arrived at. In most cases even with a speck of false membrane visible upon the mucous membrane of the fauces the delay caused by waiting for an incubation of the bacillus from a swab of wool is unjustifiable. A specimen may be taken in order to strengthen the hands of the physician in the establishment of a rigid routine and for the further treatment of the individual case, but as the antitoxin is harmless it should be injected at least once in every case where there is even the necessity of taking a swab for diagnostic purposes.

The dose is not to be regulated by the bulk or volume of the antitoxic liquid or by the age of the patient. In early mild cases 2,000 units should be injected under the skin of the abdomen or loin under strict aseptic precautions, and repeated inside 24 hours if no visible change is apparent in the small patch of membrane. Cases only seen upon the third or fourth day require larger doses—viz., 10,000 to 15,000 units—which should be repeated in half this amount in 12 hours afterwards. No late case, no matter how apparently hopeless, should be deprived of the advantage of the antitoxin, even should its intravenous injection be demanded. The repetition of the injections will be required in all such cases every 12 hours.

Should the membrane show no signs of disintegration or should it be extending it may be accepted as a limit that 25,000 units very rarely will be required, though double and even treble this amount has been given with success in grave and neglected cases. In all laryngeal or tracheal cases the first dose should never be less than 10,000 to 12,000 units. It is hardly necessary to say that the serum should be as fresh as can be procured, and that the phial containing it should not be opened till the operator is ready with his sterilised syringe to inject it into the thoroughly cleansed region. Any liquid not injected must be discarded for a sealed-up supply on repetition of the dose.

Under this treatment all early cases may confidently be expected to clear up rapidly as the discharge speedily lessens, and

the symptoms of general toxæmia and cardiac weakness are prevented, the mortality in uncomplicated faucial cases dealt with upon the first day of the disease being practically nil.

Before dealing with local treatment and with the management of laryngeal cases the general dietetic arrangements and environment of the patient may be detailed. Rest in bed in a warm and well-ventilated room should be insisted upon from the first. In private practice the room itself must be carefully isolated from the rest of the house, and a sheet kept moist by a disinfectant should be fastened outside the door.

The patient should be kept in the horizontal position owing to the danger of cardiac weakness, and any necessary change from this posture should be effected slowly, especially in the early stages of the disease when there is much septic discharge, and in the convalescent stage when a more serious cardiac weakness is liable to follow from a paralysis of the heart caused by the action of the specific toxins.

The diet should be generous and sustaining but must be administered in the liquid form. Peptonised milky foods of the consistence of gruel or cream are as a rule more easily swallowed than thin fluids; boiled milk with arrowroot in which an egg is well beaten up answers every purpose. Small quantities of beef juice or any good thick soup devoid of all greasiness may be also given at short intervals. Many children take greedily a pap made by soaking a Naples or Maria biscuit in warm milk flavoured with weak tea. When swallowing is difficult or impossible rectal feeding must not be relied upon; it is always unsatisfactory in children. The best plan will be to feed through the nasal tube, and this will be imperative in intubation cases, and at a later stage in all cases where owing to paralysis food constantly regurgitates through the nose. A small quantity of pepsin added to the food immediately before administration is a most valuable practice. Obviously in the presence of continual vomiting rectal feeding must be tried; even the hypodermic use of saline solution may be indicated, and the writer has resorted to the inunction of cod-liver oil which apparently saved life in two desperate examples of the disease in the paralytic stage, where both rectum and stomach were unavailable routes for the administration of food.

Drugs for internal administration have been of late years steadily falling into disuse since the introduction of the serum treatment. Iron, however, which is usually well borne in the disease, is undoubtedly of great value, and especially in the cases complicated with streptococcal or other septic infection; where there is much offensive discharge the drug, either by increasing phagocytosis or otherwise strengthening the defensive mechanism of the body, affords an adjunct to treatment which should never be omitted. The following is a good routine formula suitable for a child of about 4 years of age:

R. *Tinct. Ferri Perchlor.* ʒj.
 Potassii Chloratis gr. xxxv.
 Glycerini ʒvj.
 Aquæ Chlorof. ad ʒiv. *Misce.*

Fiat mistura. Cpt. ʒij. quartis horis.

Basham's Mixture, or 30 mins. Tr. Ferri Perchlor. with 1 dr. Liq. Ammon. Acet., may be given with water every four hours to adults.

Of the host of internal antiseptics from Euchlorine to Biniiodide or Perchloride of Mercury there is little to be said; the writer has long satisfied himself that all are inferior to Iron. Strychnine, however, stands alone as an internal remedy in cardiac failure, and it should be administered hypodermically once the symptoms of heart weakness show themselves, and as a preventive of this 1 min. of the liquor may be added to each dose of the above iron mixture, and small quantities of Brandy may be added to the milk.

Local applications will probably continue to be used in all cases where the discharge is profuse and offensive, but the established rule has no exceptions—that a caustic agent should never be applied with the view of destroying the bacilli or the false membrane. This reprehensible practice always increases the activity of the parasite in the underlying tissues beyond the reach of the destructive application. The introduction of serum therapy has also done away with the application of Papain, Pepsin, Lime Water sprays and other agents formerly used to cause disintegration of the membrane. In all mild and most severe cases the use of a spray of Carbolic Acid, 1 in 100 with 4 per cent. Boric Acid, is the most harmless and efficient flushing medium for the throat and nares. Swabs, syringes and douches are a source of terror to young patients, and the excitement which their use inspires often does much more harm than their employment does of good. The spray, on the other hand, when gently brought first under the child's notice as a plaything by the nurse using it to her own open mouth need be the cause of no alarm. With older patients the nasal douche or syringe may be used with a weak Perchloride of Mercury, 1 in 5,000, but warm saturated Boric Acid solution is safer. Swabs of the mercurial preparation may be used in 1 per cent. strength, or Peroxide of Hydrogen, 10 vols., may be employed in the same manner or as a spray. There is scarcely an antiseptic substance from the crude Flowers of Sulphur to the latest Iodoform substitute which has not its advocates, but the 1 per cent. Carbolic spray answers all requirements both for the mouth, throat, nostrils and nasopharynx, and it may be easily used while the patient lies upon his side with his head thrown back—

wards till the spray condenses in the mouth, after which it may be permitted to flow out on depressing the chin.

Laryngeal Diphtheria.— Though the author in his "Practice of Medicine" has pointed out good reasons for believing that the serious disease formerly known as "True Croup" is not always of diphtheritic nature, nevertheless from the standpoint of treatment all cases from the moment that laryngeal symptoms begin to show themselves should be dealt with as if the result of the Kleb's-Loeffler bacillus, the simple spasmodic croup from its peculiar invasion being easily excepted.

In addition to the isolation, general environment and feeding arrangements necessary for ordinary diphtheria, the warm air of the sick-room should be saturated with moisture by means of the bronchitis kettle, or a curtained cot, into the canopy of which steam or the vapour of boiling water may be introduced, is better. For very young children and infants, screens may be so arranged as to answer the same purpose, but which will permit the infant being kept on the lap of the nurse, as the recumbent posture is impossible when there is much dyspnoea.

A dose of 10,000 to 15,000 units of antitoxin should be administered without delay, and repeated in 12 hours should the symptoms not show signs of improvement. One of the most remarkable results of the serum treatment of diphtheria is seen in the small percentage of cases which will require operative relief when the injection has been promptly resorted to, and another result is equally striking in the almost entire absence of the supervention of laryngeal trouble in ordinary faucial diphtheria after the use of the serum has been commenced on the first or second day. Should, however, the breathing continue to be laboured and recession of the thoracic walls be noticeable, the trachea must be opened or the operation of intubation must be performed.

Tracheotomy may be required in the absence of a surgeon, and every practical physician should be familiar with the steps of the operation since he may find himself in an emergency responsible for the life of the patient gasping from a remediable obstruction of the larynx. The operation known as "high" tracheotomy or crico-tracheotomy is always selected.

Chloroform anæsthesia of mild degree will be necessary unless the patient be asphyxiated completely; in adults local anæsthesia is often quite sufficient. The head being extended by placing a small hard pillow or bolster at the back of the neck a median incision is made from the lower margin of the cricoid cartilage downwards for about $1\frac{1}{2}$ to 2 inches, dividing the septum between the sterno-hyoid muscles, any bleeding veins being clamped, and the thyroid isthmus being drawn down or divided the trachea is exposed. By fixing a sharp hook into the tissues at the lower edge of the cricoid the larynx is steadied for the scalpel, which is thrust into the lumen of the trachea with its cutting edge upwards, and the two uppermost rings of the trachea are then

divided ; usually in small patients it is advisable to sever the cricoid cartilage as well.

The trachea dilator is introduced between the lips of the slit in the tube and any membrane present gently removed by forceps, after which a proper-sized tracheotomy tube is inserted, the outer sheath or canula of which is to be fixed by tapes passed round the neck, the inner tube being kept free for frequent removal and cleansing. The skin wound is to be treated on ordinary surgical principles—viz., by dusting with Iodol and covering its margins by antiseptic gauze lightly inserted under the collar of the canula.

The after-treatment will consist in the keeping of the inner tube clear and free from obstruction ; the temperature of the sick-room should never be allowed to fall below 65° F. and the steam always be kept going ; a further dose of antitoxin should be administered after the operation unless one had been administered a short time before, and all feeding should be by the spoon.

The operation of *intubation* is one requiring considerable experience of throat operations and a fair degree of manipulative skill. It should never be performed save in hospital or where the surgeon is prepared to remain in close and constant proximity to the patient, as the tube may be expelled by coughing ; this may also occur to the inner of the two tracheotomy tubes after the trachea has been divided in tracheotomy operations, in which case it can easily be reintroduced by the nurse, but an O'Dwyer's tube must be reinserted every time by the surgeon. The operation may be performed most readily when the patient is placed upon his back ; the tube with its obturator or pilot on the end of the introducer is passed into the orifice of the larynx guided by the left forefinger of the surgeon introduced through the gagged mouth beyond the base of the tongue, and the finger must be kept in this position to steady the tube before the pilot and introducer are withdrawn.

After either operation the tubes should be removed as soon as the symptoms abate to the extent of restoring the free passage of air through the normal channel ; if the O'Dwyer's tube be kept in beyond a few days there is great danger of a permanent stenosis of the larynx following. After intubation the child should be fed by the nasal tube to prevent the food entering the lungs through the patent larynx. O'Dwyer's tube can be removed by pressure over the trachea and sudden flexure of the extended head with the mouth wide open, but when this fails it must be removed by the introducer. If serious difficulty of breathing should follow the withdrawal of the tube after the third day it will be necessary to resort to tracheotomy in order to avoid the danger of an ultimate stenosis of the larynx.

In cases of great emergency where the necessary instruments are not at hand an attempt may be made to prevent suffocation by passing into the trachea a large-eyed, gum elastic catheter or a

small stomach-pump tube of the same material having a terminal aperture.

The treatment of *Diphtheria of the Conjunctiva* is described under Conjunctivitis.

During the convalescent stage, even in mild cases of diphtheria, rest in the horizontal position must be maintained as long as there is any symptom of cardiac weakness; the pulse should be frequently investigated, and the temperature of the extremities watched carefully in infants; the patient's clothing must be warm, and generous feeding at short intervals should be strictly enforced even by the nasal tube should paralysis of the throat prevent swallowing. Iron tonics with Quinine or Strychnine should be administered as a routine till perfect health is restored.

The complications and sequelæ of diphtheria are to be treated upon general principles, always remembering that the main reliance is to be placed upon early large, and repeated smaller doses of the specific antitoxin. Broncho-pneumonia and bronchitis must be treated by appropriate remedies, but tartar emetic and nauseating expectorants must be sparingly used, if at all, in a disease characterised by debility and cardiac weakness. Ammonia is the safest agent in such cases; stimulants—brandy or whiskey in the milk, or wine whey will be generally freely indicated. Cardiac failure, as already stated, should be promptly met by Strychnine hypodermically and prolonged rest. Albuminuria in the early stage requires no interference, that following later must be treated upon the principles laid down for guidance in Acute Bright's Disease.

Scarlatinal diphtheria, contrary to what might be expected, is usually controlled by the antitoxin treatment, and as a prophylactic measure when a case of diphtheria appears amongst the inmates of the scarlatina wards an antitoxin injection of 2,000 units should be administered to each patient within the zone of infection. In the treatment of diphtheria with profuse fetid discharge from the nose and throat in scarlatinal patients the injection of the antitoxin should be accompanied by a dose of 30 c.c. of a Polyvalent Antistreptococcic Serum. The same treatment is clearly indicated in all diphtherial cases occurring independent of scarlatina when the purulent nasal or throat discharge is profuse and fetid.

For the treatment of the paralysis which follows diphtheria, see under Paralysis.

DIPSOMANIA—see under Alcoholism.

DISLOCATIONS.

In the treatment of a displacement of the articular ends of the bones entering into the formation of a joint the obvious remedy is to effect reduction at the earliest possible time before severe reflex contraction sets in. If this be attempted immediately,

the end of the displaced bone can usually be so manipulated as to replace it in its normal position through the rent in the capsule of the joint by which it has just escaped.

Rarely, except on the hunting-field perhaps, will the surgeon be fortunate enough to meet the injury in this early stage, more or less muscular rigidity being always present when the case presents itself for relief.

Force was formerly the remedy always used for overcoming this, but the use of the general anæsthetics—Chloroform and Ether—has almost relegated the pulley, cord, and weights to the museums of surgical antiquities. Nevertheless, judiciously applied force will always continue to be a valuable aid in some cases. The aim of the surgeon should be to replace the bone by manipulation when possible; as a rule this is easy when the patient has been thoroughly chloroformed.

By movements of flexion, extension, adduction, abduction, or circumduction, the bone is replaced noiselessly in its capsule, the exact nature and degree of movement being determined by various factors, such as the formation of the joint, the extent of the rent in its capsule, the displacement of tendons, &c. Sometimes when complete narcosis has taken place the bone may be, as in shoulder dislocation, easily replaced in its socket by the direct pressure of the fingers upon its articular extremity.

Should an anæsthetic be not available, or contra-indicated, steady traction is to be made in the direction of the new axis of the limb till the resistance of the muscles is almost completely overcome, when the bone may be felt to slip into its place with a snap, being replaced by the action of its own muscles, as is witnessed in the reduction of dislocations of the humerus by placing the heel in the axilla, and making steady, forcible traction upon the limb. Often, patient and gentle manipulation will achieve this by tiring the muscles without any appreciable degree of force being employed, and the writer, when resident surgeon in a large hospital for two years, nearly always reduced shoulder dislocations without chloroform in this way by raising the arm upwards, the bone being manipulated into its socket at a moment when the muscles were taken unawares, or during a brief period of relaxation, exhaustion or faintness, the heel in the axilla being very rarely resorted to. Dislocation of the lower jaw is readily reduced without anæsthesia by inserting the thumbs into the mouth and steadily pressing downwards on the last molars, whilst the chin is elevated to permit the condyle to slip into its socket. Dislocations of the hip in all recent cases can be reduced by manipulation under chloroform. The surgeon uses the femur as a lever to replace the head through the torn capsule by executing the movements of flexion, rotation, abduction, or adduction, according to the position of the displaced bone.

In old-standing dislocations considerable force must be used, but even then pulleys are seldom required. It becomes a serious

question to determine the limit of time since dislocation, which should prohibit some attempt being made to replace the bone. The humerus has been replaced after six months, and even after the lapse of a year. The hip has been reduced in several cases after six months, but many instances are on record where death from rupture of arteries has supervened upon attempts at reduction in long-standing dislocations. It will therefore be necessary in many old-standing dislocations (and exceptionally in recent ones also) to cut down upon the end of the displaced bone, and if this cannot be then replaced it will be found necessary to excise a portion of it. When the normal socket is found to be obliterated with new fibrous growth and a fairly useful new joint has been formed around the end of the displaced bone, matters should be allowed to remain as they are. It is not necessary to enter into a detail of the various manipulative manœuvres required for the reduction of luxations of the several joints of the body; these will in each instance be dictated by a knowledge of the anatomical peculiarities in the formation of the affected joint.

After the bone has been replaced an ice-bag or evaporating lotion should be applied to the joint. Some apparatus or bandage will be necessary for a time to prevent the bone slipping out again through the rent in the capsule, especially when the laceration has been extensive, but the mistake most generally made is to keep the joint too long at rest. Gentle movements should be commenced early, not later than one week, and the absorption of effused products promoted by massage. This is especially necessary in the elbows of children, and excessive care has been responsible for numberless ankylosed elbows. Most surgeons now commence with massage immediately after the reduction of all dislocations and carry out passive movements daily, avoiding the movement likely to bring the end of the bone opposite to the rent in the capsule.

Dislocations complicated with fracture especially common about the shoulder-joint should be always reduced if possible by manipulation, after which the fracture is to be treated. When manipulation fails the operation of arthrotomy should be at once resorted to and the head of the bone fixed to the shaft by screws or wire sutures; sometimes resection may be necessary.

Recurring dislocation of the shoulder may be prevented by the habitual use of a leather splint apparatus, but the only satisfactory treatment in chronic cases is the performance of capsulorrhaphy, and in some cases the relaxed and widened capsule may be diminished in capacity by "reefing" without opening the joint; the glenoid cavity has sometimes been deepened by the surgeon.

DROPSY.

The scientific treatment of this common sign present in many diseased conditions can only be commenced after a careful

examination has determined the cause of the anasarca, and the removal of the swelling will be effected by those remedies which exert a specific action upon the primary disease. Thus in cardiac dropsy the effusion into the cellular tissue being mainly the result of diminished arterial and increased venous pressure, the proper treatment will consist in raising the power of the cardiac muscle by cardiac tonics and stimulating the kidneys by diuretics, as will be described under Heart, Valvular Diseases of. The dropsy of hepatic cirrhosis and portal thrombosis is due entirely to obstruction in the portal venous system and is to be treated by tapping the peritoneal cavity or by establishing a new route for the blood to reach the heart, as described under Ascites.

Renal dropsy, whose treatment is described under Bright's Disease, must not be regarded as merely the result of the accumulation of water in the system owing to its faulty elimination through the diseased kidney; the altered condition of the blood and of the endothelial lining of the small bloodvessels are very important factors which must receive attention, hence the necessity for the elimination of waste products and the signification of a salt-free diet which by diminishing the amount of sodium chloride in the exuded liquid tends to cause its absorption by the peripheral vessels.

The blood condition is the primary agent in the production of the anasarca of anæmia, chlorosis and beri-beri and of the local swellings in erythematous or urticarial affections, and should be met by free administration of Calcium Salts.

The anasarca of Quinke or Angio-neurotic œdema is little influenced by treatment; the only danger is through obstruction of the larynx caused by anasarca about the glottis, in which case a free scarification of the swelling or even a high tracheotomy operation may be indicated. The cause of the disease will probably be found to be a toxin like that produced in urticaria, whose selective action is upon the peripheral vaso-motor nerves; hence a large dose of a Saline Purgative in strong solution should be given. Osler has found benefit from the administration of Nitro-glycerin. Chloride of Calcium should always have a trial, and this acts beneficially in the allied œdema occurring in Henoch's purpura.

DROWNING.

Upon the removal of an apparently drowned individual from the water, resuscitation should be commenced without a moment's delay by carrying out some plan of artificial respiration. There are various ways of starting the respiratory process; formerly the rival methods of Marshal Hall, Sylvester, Howard and Laborde competed with each other for supremacy. These have given way to Schäfer's method, which is the one recommended by the Royal Life Saving Society as being the most efficacious and simple and easy of execution. The body should be placed

horizontally on the bank, with the back upwards and the left side of the face resting on the ground, no attempt being made to remove the wet clothing or to cause inversion by raising the feet. The operator instantly places himself astride the patient's body by kneeling upon the ground and applies each hand with his fingers widely apart over the lowest ribs, the thumbs being planted upon either side of the spine in a parallel direction pointing towards the patient's head. The operator's elbows being kept extended, he next steadily leans forward so as to throw through his hands the weight of his own trunk upon the lower part of the patient's chest in order to effectually compress the thorax and expel the air contained in the lungs and any water which may have been inhaled. He then rapidly swings his own body backwards without letting go his touch of the patient's chest in order to permit the ribs to resume their normal position and draw in a fresh supply of air as the pressure is suddenly removed. The alternate compression and relaxation of the thorax is continued every five seconds without any marked pause between the movements and the operation is persisted in till natural breathing is established or till the hopelessness of resuscitation is obviously demonstrated. One great advantage of Schäfer's method is that the operator need give no thought to the position of the tongue; this cannot fall backwards and block the air passages—a danger always liable to arise in the performance of the older methods with the patient lying on his back. Another advantage lies in the facility which it gives for the expulsion of water through the mouth whilst the patient is lying upon his face.

The operator must remember that life often has been saved after more than an hour's continuous performance of artificial respiration when no signs of vitality have been present, and he should not desist from his efforts till thoroughly satisfied that the task is absolutely hopeless.

Where the period of *complete* submersion has been known to extend over several minutes the operation is of no avail. Two minutes of submersion have been regarded as fatal, but the writer at a private séance timed a professional swimmer who remained under water in a large glass tank for 4 minutes 5½ seconds, his features being under observation all the time.

Whilst Schäfer's method is being carried out, assistants may be employed in rubbing and applying warmth to the extremities. As soon as spontaneous breathing occurs, the patient should be turned upon his back and the wet clothing replaced by warmed blankets, friction being assiduously carried on over the extremities, always in the direction which promotes the flow of venous blood towards the heart. As soon as possible he should be removed to a warm bed and hot-water bottles applied to the surface of the body.

Any threatening of stoppage of the breathing must be met by a return to artificial respiration; Laborde's method of rhythmical

traction of the tongue is very convenient at this stage should it arise. Some authorities recommend the induced current with one pole applied over the phrenic nerve in the neck and the other over the sixth interspace between the right axillary and mamillary lines so as to induce vigorous contraction of the diaphragm, the poles being applied at the moment that the artificial inspiratory act is being performed.

Warm drinks containing a moderate amount of alcohol may be administered as soon as the patient is able to swallow, but as a rule stimulants should be withheld till the patient has been enveloped in warm blankets and placed in bed. A large dose of alcohol administered when the individual's body is still chilled in transit towards the nearest house is liable to cause a further loss of natural heat; the opposite effect follows when the stimulant is given after he has been put to bed and surrounded with warm-water bottles.

Barreiro maintains that in drowning there is an intense congestion of the brain and spinal cord as well as compression of the lung by elevation of the diaphragm owing to the amount of air and water swallowed and the heart dilates. Blood-letting is part of his routine, and he opens a leg vein so as not to interfere with artificial respiration. For the artificial respiration he places the patient in a sitting posture, with the head and shoulders well raised so that the weighty abdominal viscera draw down the diaphragm and thus aid the artificial movements which the attendant executes whilst placed behind the patient, supporting his back with one knee. The movements consist of alternate compression and expansion of the thoracic walls by the arms of the patient as in the older methods of resuscitation, whilst an assistant performs rhythmical traction on the tongue.

For the writer's views upon the nature of so-called "swimmer's cramp," which is a common cause of drowning, see p. 203.

For the practical methods of rescuing drowning persons whilst struggling in the water the reader is recommended to study the illustrated handbook of instruction which is issued by the Royal Life Saving Society, and which should be in the possession of every physician and swimmer. (It can be obtained by application to the office of the Society at Bayley Street, London, for the sum of one shilling).

DUODENAL ULCER—see under Gastric Ulcer.

DUPUYTREN'S CONTRACTION OF THE PALMAR FASCIA.

Sometimes in very slight cases the deformity may be kept from extending and even a cure may be effected by constant passive movements and massage with the careful application of a well-padded metal splint worn every night so as to keep the fingers fully extended by the use of elastic tractors. In the majority of cases this treatment, however, is useless, but before resorting to

surgical operation the hypodermic injection of Fibrolysin or Thiosinamin should be tried and repeated for at least 20 times, 2 c.c. of Fibrolysin being injected into the palm of the hand, though any other region as the buttock may be selected. Many cases are on record where this treatment has caused entire absorption of the pathological fibrous tissue whose slow contraction produces the deformity. Massage, passive movements and splints should be used at the same time.

The operation of subcutaneous division of the fibrous bands by a number of separate punctures avoiding the transverse palmar crease gives immediate results and permits of the extension of the fingers, but relapses are the frequent outcome of this method even when a splint is assiduously applied afterwards.

The favourite procedure is to make a V-shaped incision and openly dissect back a flap of skin, removing entirely all the bands of fibrous tissue with the prolonged processes of normal fascia which go to the sides of the phalanges; when the deformity is reduced the sutured wound assumes a Y-shape.

Kocher insists upon thorough *extirpation* of the thickened and shortened palmar fascia with its extensions, after simple longitudinal incision of the skin of the palm. He holds that no operation can guarantee against relapse unless it include prophylactic excision of healthy parts of the fascia.

The writer would suggest that perhaps the best method of treatment will be found to be the old subcutaneous fasciotomy followed up by massage, extension and splints, combined with a prolonged course of fibrolysin injections to prevent relapse.

DYSENTERY.

The treatment of this affection is still involved in considerable difficulty and much confusion yet exists about the relative value of various methods of dealing with the disease owing to the fact that several different diseased conditions are grouped together under the title of "dysentery." The difficulty is intensified rather than relieved by recent pathological researches, which prove that two or more of these processes may be combined in a given case. If the classification of dysentery into the *bacillary* and *amœbic* forms be accepted this difficulty will diminish, but Ford insists upon a third class—the *mixed* form—and many authorities maintain that from the therapeutic standpoint all cases should be considered as more or less mixed. Thus the streptococci found in bacillary endemic and epidemic dysenteries in temperate climates are also always actively present in the amœbic form in hot climates, and it must be remembered that both the amœbic and bacillary forms may be met with in temperate and in tropical countries, hence the term *tropical* dysentery only adds to the confusion.

Fortunately or otherwise, however, in the present state of our knowledge the treatment of an acute attack of dysentery of either

form is to be carried out on much the same lines ; the differences will be detailed later on.

Preventive or prophylactic measures are the same in all types and are of vital importance in travelling in the tropics, in war and in the regulation of life in barracks and asylums and in all regions in time of famines or scarcity of food supply and other depressing conditions. The water supply is of primary importance, as many epidemics have been traced to pollution of this through excreta in the soil ultimately finding their way into the water used for drinking and bathing. It has been also proven that the disease may be spread by water contaminated by other impurities which prepare the soil for the invasion of the specific micro-organisms as in the case of cholera. The destruction of the excreta by fire, disinfectants, or deep burying in the soil and the boiling and filtering of all water used for drinking or washing purposes should be rigidly carried out ; fruit should never be eaten till thoroughly cleansed, and the most thorough cleanliness of bed and wearing linen, &c., is important. The Lister Institute Serum is prophylactic against bacillary dysentery, and immunity in epidemics has been established by Vaccine treatment.

As soon as the symptoms indicative of an acute attack of any type of dysentery are observed the patient should be ordered to remain in bed ; his food should consist of small quantities frequently administered of a liquid food, as peptonised milk or light soup, chicken jelly or meat essences.

Initial Purgative.—Notwithstanding the presence of diarrhœa and tenesmus it is always essential as a routine to administer a smart purgative at the beginning of the illness. Three types of cathartics, each having their strong advocates, are in ordinary use both at home and in the tropics ; these are Castor Oil, Salines and Calomel. The former is much used and never can do harm for the reasons mentioned on p. 230. Salines are more speedy in their action of sweeping out the contents of the intestines, and by many authorities the plan of administering Sulphate of Soda or Magnesia in drachm doses 4 or 6 times a day is kept up after the administration of the large initial dose. Calomel in one dose of 5 to 10 grs. is a favourite drug for starting the treatment. It is probable that large doses of calomel possess no greater antiseptic action on the intestinal tube than small ones, hence it is necessary to differentiate between the merely purgative and the intestinal antiseptic action of the drug.

Serum Therapy.—The patient having been placed in bed and a dose of either of the above cathartics administered, the question of serum treatment comes up. If the case is one of bacillary dysentery there can be no doubt about the value of injections of a serum prepared by immunising horses with different types of the Shiga-Kruse bacillus and its toxins. The dose is 20 c.c. of the Lister Institute preparation. Todd's serum is still more powerfully antitoxic, and Wright's Vaccine method has also

given good results. The mortality has been reduced by 50 per cent. through the use of serum, but in amoebic cases it is obviously of no value. Shiga uses a Polyvalent Serum prepared from the four strains of bacilli got in bacillary dysentery. It must not, however, be assumed that the finding of amoebæ in the stools absolutely contra-indicates serum therapy; A. R. S. Anderson found amoebæ in the stools of 30 per cent. of patients who were not suffering from dysentery, and these organisms could not be differentiated from the so-called specific amoeba. The agglutination of the Shiga-Kruse bacilli with the serum of the patient is a valuable diagnostic point and a clear indication for the use of serum therapy.

Intestinal Antiseptics.—These would constitute the ideal treatment, but Salol, Naphthol and its derivatives, as also Aspirin, have proved most unreliable. The only drug whose antiseptic action can be regarded as of any value is Calomel, and in doses of $\frac{1}{2}$ gr. every hour this has proved efficacious in some epidemics, but useless in others. Its proper place in the treatment of dysentery is as an initial purgative or as an adjuvans to the following remedy:

Ipecacuanha.—This has long been regarded as a specific in the milder forms of dysentery, but the opinion prevails that it only is of value in the bacillary type, though there can be no doubt about its specific action also in the amoebic variety. Its use should constitute the routine treatment of all types of acute bacillary dysentery, though it must be regarded as a purely empiric remedy. Various methods are employed for the administration of ipecacuanha, which must be given in large doses to be of any use. 30 grs. in water should be given after a 2 or 3 hours' fast following a smart purge, and no food or liquid must be administered for at least a couple of hours to prevent vomiting, which is also rendered less likely by a previous dose of Opium, a Sinapism to the abdomen and strict repose in the recumbent posture. 2 or 3 such doses should be given in 24 hours. Keratinised tablets, capsules, pills, cachets and membrs have been prepared in order that the drug may pass through the stomach without causing irritation, and the emetine has also been extracted from it with the view of depriving it of its emetic action, but this purification apparently destroys its virtues. As already stated, Calomel may often be advantageously combined with this drug, and Tannalbin, Tannigen and Salicylate of Bismuth are sometimes also employed with it.

Enemata.—The plan of flushing out the colon and injecting various antiseptic solutions is of much value in the amoebic type, but most authorities regard rectal injections as useless in bacillary dysentery. Even in the acute stage of either type a careful irrigation of the colon by a slowly administered enema of warm Saline Solution often relieves tenesmus, assuages thirst and tends to prevent collapse. The most rationa antiseptic

solution in amœbic dysentery is a $\frac{1}{2}$ per cent. Quinine Solution; $\frac{1}{2}$ dr. of the acid hydrochloride dissolved in 3 pints of warm saline solution should be slowly injected into the rectum from a low-pressure reservoir when the patient is lying flat with the trunk depressed and the pelvis raised. Anderson injects 40 oz. refined Petroleum Oil after flushing with normal saline. Perchloride of Mercury, Copper Sulphate and Silver solutions are also recommended, but the use of these should be confined to the treatment of the chronic forms of the disease.

The specific antitoxin serum may be pushed in bacillary dysentery by daily doses of 20 to 40 c.c. in the presence of urgent symptoms, and doses as high as 100 c.c. of the Lister Serum have been given in grave cases.

Symptoms as they arise in acute dysentery must be met by remedies administered upon approved principles, thus vomiting can be relieved by sinapisms, small doses of Morphia or Cocaine and small quantities of iced effervescing drinks. Tenesmus will often yield to small Starch Enemata with 20 mins. Laudanum or larger amounts of Olive Oil. Collapse should be met by hypodermic doses of large quantities of Saline Solution and profuse diarrhœa by Tannalbin or Tannigen given by the mouth. Hæmorrhage from the colon may be stopped by injections of Adrenalin and abdominal pain by poultices and Morphia given by the mouth or hypodermically.

The variety often known as *catarrhal* dysentery, in which the dysenteric inflammation does not tend to pass into the ulcerative or gangrenous stage usually passes entirely away under the above treatment after a few days, but the diphtheritic, ulcerative and gangrenous forms are very intractable.

·CHRONIC DYSENTERY.—The treatment of this affection is most tedious and unsatisfactory, the disease often proving rebellious to all remedies. It may begin as the sequel to an acute attack of either amœbic or bacillary dysentery or its advent may be insidious. The treatment must be conducted mainly upon the same lines as for the acute disease; the patient in the acute exacerbations which supervene upon the chronic condition must be sent to bed and have liquid food, and the colon should be flushed with warm Saline Solution or a full preliminary dose of Calomel, followed by a saline purgative, should be given. After a 4 hours' fast 15 mins. Laudanum are administered, and in 15 minutes 30 grs. of Ipecacuanha should be given and the most absolute repose insisted upon, as advised by Manson, a mustard poultice having been previously applied to the abdomen and the head kept low without a pillow. No food should be permitted for 3 hours after the dose of ipecacuanha. Upon the following night this treatment is to be repeated, the dose of laudanum and ipecacuanha being gradually diminished by 5 mins. and 5 grs. each time, so that upon the sixth night he is receiving 5 grs. ipecacuanha, which is to be continued for 10 days

longer. When hepatic pain and enlargement are present the dosage must be larger.

The rectum should be examined by the proctoscope and any ulcers found should be cauterised by Sulphate of Copper or the Mitigated Stick. The colon may be injected with a warm 1 in 2,000 Nitrate of Silver or in the amœbic form with a 1 in 1,000 Quinine solution, the injection being retained for several minutes when possible. Innumerable antiseptic liquids have been used, but the above alternating with warm saturated Boric Acid solutions meet all requirements. Much stronger solutions can be safely applied when limited to the rectum.

Many vegetable astringents and antiseptics are in use in tropical countries which appear to possess little value when tried at home. The most recent of these is the powdered pericarp of Mangosteen, which is given in 60-gr. doses every 2 hours and the fluid extract of Chaparro Amargosa in teaspoonful doses three or four times a day. Neither seem to be more reliable than the ancient Bael Fruit decoction which is passing into disuse. Drummond's decoction of fresh Cinnamon is a valuable preparation.

Many authorities recommend the administration of Saline Purgatives throughout, but these should be reserved for the treatment of the constipation which is sure to come on at intervals. Olive or Castor Oil may be used as laxatives with safety when the bowels get locked up. When the diarrhœa is very profuse, a few doses of the saline may be given to clear out the bowel, after which Tannalbin may be administered or small enemata of Laudanum and Starch may be used to relieve tenesmus and rectal pain.

Liquid food will be required as long as the symptoms remain severe, but arrowroot or other smooth farinaceous material may be added from time to time. Change of climate is essential in every case of chronic dysentery of either the amœbic or bacillary type.

Salol and other so-called intestinal antiseptics are of little if any value, and in chronic cases obviously calomel cannot be employed except very occasionally.

Surgical Treatment.—Motz in the acute form recommends the performance of appendicostomy, followed by injections of warm water into the cæcum through a fine rubber tube. In the chronic types the appendix should be removed, and in some cases ileo-sigmoidostomy or cæcostomy may be performed and all ulcers revealed by the rectoscope should be touched by the galvano-cautery.

The complications and sequelæ of chronic dysentery are to be treated upon generally approved medical and surgical principles. The most serious being perforation of the colon from rupture of the floor of a deep ulcer, both this and the peritonitis which may occur without rupture should be treated by abdominal

incision. Hepatic abscess is a very common sequel to amœbic dysentery, and its treatment will be discussed under its own heading.

Quinine should be freely given in large doses when malaria complicates the disease.

DYSIDROSIS, POMPHOLYX, OR CHEIROPOMPHOLYX.

In the acute itching stage the best application will be 1 dr. of Liquor Carbonis Detergens, and 15 mins. Liq. Plumbi Fort. with 1 oz. of Cold Cream or Vaseline. Unna believes that the disease is the result of a specific bacillus; hence many authorities advise frequent bathing of the affected parts with antiseptics, and since only the hands are generally involved this is easily carried out by soaking the skin in diluted Jeyes' Fluid, Lysoform, Salicylic Acid, Permanganate or weak Perchloride of Mercury solutions. When the vesicles appear the patient should be at once put upon Arsenic and a liberal diet; 5 mins. of Fowler's Solution need not be exceeded. Tilbury Fox recommended diuretics. Iron, combined with the arsenic at a later stage, appears to prevent new crops of vesicles or bullæ making their appearance. Pringle states that alcohol, tea, and tobacco are injurious. Everything that improves the tone of the nervous system and increases the body nutrition should be persisted in.

DYSMENORRHŒA.

Practically every civilised woman suffers from more or less discomfort and malaise at the menstrual epoch, such manifestations as pain and weight in the back and loins, some abdominal cramp, headache and a general sense of lassitude being very common. When these unpleasant sensations become severe enough to merit the name of dysmenorrhœa is perhaps difficult to decide as we have no measure of pain, but it may be taken as a rough-and-ready rule that a woman may be said to have dysmenorrhœa when the pain associated with menstruation is sufficient to disable her for a shorter or longer time from following her usual avocations.

From what has been said above it follows that there is a whole class of cases of dysmenorrhœa, in which the disability has no relation to any pelvic affection, but is the direct result of a general condition which causes the normal menstrual malaise to be felt much more acutely than it is by a normally healthy woman. Such cases may be divided roughly into a *neurotic* and an *anæmic* type, and most of these cases are found in girls and young women who are still unmarried. It is in such cases wisest for the physician to ignore as far as possible the sexual organs and to avoid at first any local examination or therapy. A persevering trial should be given to measures adapted to restore the general health, chief among these being strict attention to the hygiene of diet, sleep, rest and exercise, with the administration of tonics

such as Iron, Arsenic and Strychnine, and insistence on saline aperients. (See also articles on Anæmia and on Neurasthenia.)

It is often advisable to combine with these general remedies some measures more particularly adapted to the relief of the menstrual pain. One of the most useful is *rest in bed*, which should be insisted on at first for the entire menstrual period, and afterwards for at least the first day. The drugs most likely to be useful are *phenacetin* in 5-gr. doses repeated at intervals of 2 hours for three doses, *apiol* in 1-gr. capsules every 3 hours, *guaiacum* in 10-gr. powders three times a day for a few days before the menses are expected, *tannate of cannabin* 2 to 4 grs. three times a day for a week before the period, *bromide of soda* 40 grs. administered *per rectum* in half a pint of warm saline solution. The two things to avoid are *alcohol* and *opium*, but in the worst cases a hypodermic of morphia may be indispensable. A hot bag to the abdomen is often useful, so is a hot water and mustard foot-bath. Blisters to the spine have also been recommended.

When a fair trial has been given to these remedies without any relief being afforded, it is, I think, best in all cases to suggest to the patient or her friends a pelvic examination, which should be made under an anæsthetic in the case of an unmarried woman, with permission to perform any minor operative procedure indicated as advisable by the examination. In the case of a married woman, a pelvic examination should precede any efforts at treatment. The operative treatment of the case will differ, of course, with the condition found.

1. There may be no pelvic lesion or abnormality discoverable. In this case the condition is probably a *spasmodic dysmenorrhœa*, the pain being caused by cramp-like contractions of the uterine muscle, especially of that surrounding the internal os, and the appropriate treatment is to dilate the cervix up to 12 or preferably 14 Hegar, so as to overstretch the muscular fibres of the internal os and so obviate their abnormal contraction. After dilatation it is well to curette the uterus, as there may be an abnormal sensitiveness of the endometrium which will be relieved by curetting (see Endometritis). This is successful in from 40 to 50 per cent. of cases, in others it gives temporary relief and should be repeated when the dysmenorrhœa returns, and in others it is without effect. It is most likely to be successful when the dysmenorrhœa is of extreme severity, but only lasts a few hours. In the most severe and intractable type of these cases, as well as of those belonging to the next section, the question of removing the ovaries will probably arise as a last resort from the pain. The practitioner should be very chary of giving his consent to this operation. He should be perfectly convinced not only of the existence of unbearable pain, but of the fact that the pain is having an injurious effect on the patient's general health. He should remember that castration has its own evils in a premature menopause, and the nervous disturbance that accompanies it,

and he should not forget that the removal of painful ovaries is not always followed by the disappearance of pain referred to them. The same objections to the removal of the uterus are not present, and although this measure necessarily condemns the patient to barrenness, that is the less to be deplored, as most subjects of intractable dysmenorrhœa are also sterile. Whether it will be as efficacious can only be proved by trial.

2. A pelvic lesion or abnormality may be the cause of the dysmenorrhœa. A common form of pelvic abnormality found in cases of dysmenorrhœa is some *failure of development of the uterus*. In extreme cases the uterus may be represented by a mere knot of tissue, and these usually prove very intractable; sooner or later the question of removal of the rudimentary uterus or of the ovaries is sure to arise and must be settled on the lines already suggested. Short of this no operative interference is likely to do good, and general measures must be relied on. In other cases the uterus is infantile in type, the cervix being fully developed, but the body undeveloped. These cases are not very amenable to treatment, but I think they benefit sometimes from curetting and packing with gauze. Again, the body of the uterus may be poorly developed and may be acutely anteflexed on the cervix, which is often narrow and conical. Many of these cases are relieved by dilatation and curettage; in some I have got good results from Dudley's operation, in which the posterior lip of the cervix is split up, and by the excision of a half-diamond-shaped piece on each side and subsequent transverse suturing the external os and cervical canal are brought into line with the axis of the uterine cavity.

In a number of cases examination reveals a condition of *endometritis*, either a true chronic inflammation as shown by the discharge of muco-pus, or a hyperplasia of the endometrium, sometimes associated with dilatation of the capillaries. The endometritis may be combined with retroversion of the uterus. Such cases are usually benefited by dilatation and curetting. (See under Endometritis.)

In other cases examination shows the presence of an *erosion*, often an unsuspected cause of dysmenorrhœa as of other symptoms. In my experience the only certain cure for this condition is to slice off the affected cervical mucous membrane much as one shaves off a skin-graft. I have tried various caustics, phenol, formalin and fuming nitric acid, but with very disappointing results. After shaving off the erosion the upper end of the vagina should be packed with iodoform gauze, and after its removal a daily douche should be given for a week.

3. A serious pelvic lesion exists of which the dysmenorrhœa is a symptom. One of the most striking types of this class of case is the patient with a *fibroid*. In about half the cases of fibroid, dysmenorrhœa is a symptom and may be the only symptom of the presence of the tumour. The pain is usually caused by the

excessive loss of blood, clots are formed, and cramp-like contractions of the uterus are required to expel them. In a number of cases a very small fibroid situated at the internal os has been shown to be the cause of dysmenorrhœa. The remedy is the removal of the fibroid, with or from the uterus. (See Uterine Fibroids.)

Another type of case is that in which the dysmenorrhœa is a symptom of disease of the ovaries or tubes, usually inflammatory. The amount of pain is no criterion of the extent of the mischief. Many of these cases may be benefited by measures adapted to the relief of the tubal or ovarian congestion. (See Ovaritis, Pyosalpinx, Salpingitis).

In still another type of case there is retroversion with endometritis. (See under Endometritis and Retroversion.)

ELECTRICAL TREATMENT OF DYSMENORRHŒA.—Electrical treatment in diseases of women has rather fallen into disrepute. Latterly, however, some records of encouraging results have appeared, and in inveterate cases it is worth trial. The galvanic current is most generally useful. The positive pole, usually a copper plate covered with flannel moistened with saline solution, is placed over the lumbo-sacral region, and the negative pole, which takes the form of a copper sound insulated up to $2\frac{1}{2}$ inches from the tip, is introduced into the uterine cavity under strict antiseptic precautions. The strength of the current should be at first 5 milliamperes, which is gradually raised to 25 milliamperes, the first complaint of pain being a signal to stop. The current is allowed to pass for 3 to 5 minutes, and the séance may be repeated twice a week during the intermenstrual period. The presence of pus tubes or ovarian abscess is a contra-indication to the treatment. The faradic current has also been used to lessen pelvic congestion, and high-frequency currents have been employed with benefit in neurotic cases. It is at least questionable whether much of the benefit supposed to be derived from electrical treatment is not due to suggestion.—R. J. J.

DYSPEPSIA.

This term unfortunately has been accepted as a synonym for the group of functional stomach affections labelled as "Gastric Neuroses." It may in its varied phases be accepted as the predominant symptom of these affections, as it also is of many truly organic diseases of the stomach, but the treatment of functional affections of this organ has been plunged into hopeless confusion by regarding all cases where acute or chronic indigestion is the main symptom as falling under either organic disease of the organ or a gastric neurosis, or as the result of gastritis.

A similar muddle has arisen in the treatment of diarrhœa owing to the craze for classifying this symptom under the various headings of "Enteritis," and the student is advised to read the article on Diarrhœa in association with the remarks which here follow on dyspepsia.

To simplify the subject we may define dyspepsia as purely a *symptom* of gastric indigestion or of some perverted or retarded action in the normal digestive process. Accepting this definition we may safely affirm that numerous cases in which disordered digestion is the prominent feature are constantly presenting themselves for treatment in which there is no gross structural lesion or any inflammatory condition present and in which the function of the nervous mechanism is working normally. For convenience such cases may be considered as examples of *simple dyspepsia*, regarding the condition solely as a symptom-complex and not as a disease.

Obviously the first step in treatment is to determine the causal agent and effect its removal. In acute attacks this may be : (1) some irritating substance introduced into the healthy stomach generally in the form of improperly cooked food, as baked fat meat or pork, food which has already commenced to undergo putrefactive change, warm freshly-baked bread or cakes, improperly made pastry, unripe fruit, acid beer, wine or cider, or even large draughts of iced water ; (2) the food may be normal in every respect but taken in such amount as is beyond the power of the gastric juice to cope with ; (3) the quantity and quality being normal, it may be bolted hastily in such unmasticated lumps as will only permit the digestive juices to operate upon the outer layer of each mass, the normal process being thus prolonged and secondary fermentative changes set up ; (4) the same results will follow when the intervals between the meals are so short as to prevent the stomach being emptied before another supply of food is introduced ; or (5) an acute attack of dyspepsia may result from indulgence in an ordinary meal of solid food after a very prolonged fast.

It will be obvious that should these errors be persisted in a true catarrhal inflammation of the mucosa will become established, but such gastritis should be regarded as the *result* and not the *cause* of the dyspepsia, a condition of affairs exactly corresponding to the diarrhœa which results from the irritation of the intestines by cathartics, which is usually described wrongly as being of inflammatory origin.

The treatment of *Simple Acute Dyspepsia* will therefore consist immediately in severe cases in the administration of an emetic if nature does not effect relief by vomiting, after which all symptoms of pain, nausea, and distension rapidly disappear. The best emetic in these cases is a copious draught of lukewarm water or a pint of warm infusion of Chamomile Flowers assisted if necessary by tickling the fauces, the large quantity of water will also often afford considerable relief by diluting the irritating contents of the stomach. Where intense acidity is the predominating feature of the distress a large dose (1 to 2 drs.) of Soda Bicarb. in a tumblerful of cold water will often give immediate relief by neutralizing the organic acids produced by fermentation.

The after-treatment will consist in a short period of judicious starvation and the administration of a purgative if diarrhœa has not already followed.

Simple Chronic Dyspepsia may be the result of similar errors in feeding, and the correction of these will effectually cure the condition and prevent recurrences. In many instances the physician by careful and conscientious investigation may find that the error in diet arises from a too restricted dietary, the patient having eliminated one article of food after another under some fanciful theory that each is injurious, whilst the cause of the condition may be due to irregularity in the meal hours or other unsuspected error. Of all the articles of diet perhaps no single one is so frequently responsible for simple indigestion as the pernicious custom chiefly prevailing amongst women of indulging in tea between meals and sometimes at all hours of the day. This is seen constantly amongst the female operatives in mills and factories, whose chief meals consist largely of tea often infused or even boiled for long periods. Though this type of chronic indigestion is classified amongst the gastric neuroses or as a form of gastritis, it nevertheless usually disappears promptly and permanently when the cause is removed if no inflammatory or nerve disturbance has been set up.

Another cause is that of bolting the food hurriedly. This, contrary to what is usually stated, is more frequently found amongst those who have good teeth than those who have imperfect or absent molars, because though in the latter mastication must be imperfect, the individual is usually conscious of his defect and takes his food more slowly. This form of dyspepsia can be at once recognised by a peculiar sparse furring of the tongue with prominence and redness of the papillæ, and one often meets with such patients who have gone the rounds of various physicians and used numerous drugs and elaborate diet lists without relief for months or even years; the correction of the bolting rapidly removes all dyspeptic distress.

Another cause of dyspepsia somewhat akin to the last mentioned and occasionally associated with it is wind-sucking. After some temporary interference with the digestive process, as rapid eating or badly-cooked food, the patient tries to belch up flatus in order to obtain relief; with each *voluntary* belching effort a larger amount of air is always swallowed or drawn into the stomach each time than the volume of expelled flatus, and the result is that a chronic habit is induced which is too often ticketed as a form of gastric neurosis, especially as the flatulent distension may remain from the exercise of the habit long after the original cause of the dyspepsia has disappeared. Once the physician can convince the patient that he swallows more air than he expels, this symptom of chronic dyspepsia speedily disappears upon the discontinuance of the habit.

Still another cause of simple chronic dyspepsia must be men-

tioned, as its correction is the main or only treatment necessary for the cure of the resulting failure in digestion. This is caries of the teeth, which, however, is a totally different question from imperfect mastication, though much misconception exists on this apparently trivial distinction. The hollow cavities of the necrosing molars harbour myriads of micro-organisms, which flourish in this rich culture-ground and are swallowed with each meal along with their soluble toxins. These undoubtedly interfere with the digestive process in the stomach, leading to a retardation of the normal time, and probably also by inhibiting the pepsin secretion fermentative changes are started. That the dyspepsia under these conditions is the direct result of microbic action, and not of imperfect mastication, is easily proven by placing the patient upon a purely liquid dietary, when no improvement will follow. The treatment of this common form of dyspepsia is obvious; the patient's symptoms should not be prescribed for, he should be handed over to a dentist who is to make a complete and clean sweep out of every diseased tooth, and it is astonishing to witness the change which often follows; the dyspeptic symptoms speedily disappear, appetite returns, and the weight increases.

From the above examples of simple dyspepsia which do not fall under the new or modern classification of stomach ailments, but which perhaps are more common than the whole of the gastric neuroses group, it will be obvious how important it is to investigate every case when disturbed digestion is the prominent feature so as to find out the cause in each, instead of prescribing fancy diets and feeding the patient on drugs. No remark need be made about the most common of all varieties of dyspepsia, as it seldom comes under the physician's care. This shows itself in perfectly healthy individuals with an apparently normal condition of stomach but where an attack of acute dyspepsia always follows the ingestion of a particular article of diet which other healthy and even dyspeptic patients may eat with impunity—the condition is akin to the idiosyncrasy which the physician meets with occasionally in prescribing certain drugs. As the patient of average intelligence discovers his peculiarity for himself he soon learns to avoid the disturbing element in his dietary.

Whilst the removal of the cause will speedily effect a cure in the great majority of cases of simple dyspepsia, nevertheless a few remarks may be made about the general regulation of the dietary and the use of routine medicinal aids which tend to expedite recovery.

The unfortunately prevalent custom of giving the patient a printed or written cut-and-dry list of the different meals of the day should be avoided when possible. Flint's statement may be accepted as a truism applicable in most instances: "I have never known a dyspeptic recover vigorous health who undertook to live after a strictly regulated diet, and I have never known of an

instance of a healthy person living according to a strict dietetic system who did not become a dyspeptic, and that in a great number of cases in which persons have been sufferers for years on a regulated diet, health has been speedily regained by simply eating in accordance with appetite." The explanation of this lies probably in the fact that the original error having been long since corrected, the stomach is weakened by the prolonged restriction imposed by the artificially framed diet, just as a joint becomes useless by the long-continued rest which is insisted upon by the timid surgeon who refrains from prescribing exercise. One rule should never be departed from in any case, the patient should be prohibited from taking baked animal food in every form and from eating meats which have been recooked. The meal hours and the intervals between these must be well regulated and never departed from unless the causes are quite unavoidable; an average of 4 or 5 hours between each is desirable, and in subjects liable to attacks of acute dyspepsia from whatever cause the late dinner hour with its necessary heavy meal had better be avoided. The masticatory apparatus must be put into proper order, bolting in haste must be warned against, tea and coffee between meals, and large quantities especially of cold fluids at meal-times must be forbidden. Rest of mind and body for a short time after food is essential, and breakfast should not be swallowed immediately after getting out of bed. Predigested or peptonised foods are as a rule not indicated in simple dyspepsia, and no case can be considered as cured till a fair amount of fresh vegetables can be introduced into the dietary.

Hygienic measures, which improve the tone and vigour of the general system, are indicated as suitable clothing (Brunton recommends an abdominal flannel binder), a healthy residence upon an elevated, dry situation; open-air exercise; sea bathing; change of scene and, if convenient, of employment, with early hours; and freedom from occupations causing high pressure or mental worry. Agreeable society, especially at meal-times, is of much use, and it is a good rule which prevents the dyspeptic from dining alone. The habit of reading while the patient sits at meals is very objectionable.

As regards the use of drugs these are not to be thought of till the cause of the indigestion has been discovered and removed. After a long-continued abuse of the organ following any of the causes already mentioned the condition of gastric catarrh or a genuine gastric neurosis may have become established which will not yield immediately upon the withdrawal of the exciting cause, in which case the condition will require the exhibition of the remedies mentioned under Gastric Neuroses and long and patient administration of gastric sedatives, digestive agents and probably lavage.

In the majority of cases of simple dyspepsia after the removal of the exciting cause the stomach will regain its normal healthy

state without the aid of drugs ; when, however, the return to the normal is delayed the digestive process may be expedited by judicious treatment. Valuable indications will be obtained on recognising two types of stomach condition following prolonged errors in dietary, irregularity in meals, improper methods of eating, dental caries, wind-sucking, &c. These are the conditions which were formerly described as *atonic* and *irritative* dyspepsia when dyspepsia was erroneously regarded as a disease and not as a symptom of many diseased processes in the stomach. (See under Gastric Neuroses.)

Thus in the atonic state of the stomach before dilatation of the stomach has set in much benefit will be obtainable by the administration of Vegetable Bitters before meals and the use of Pepsin after food, as in the following combinations :

R. *Tr. Nucis Vomicæ* ʒij.
 Ac. Nitro-hydrochlor. Dil. ʒiij.
 Tinct. Aurantii ʒss.
 Infus. Calumbæ ad ʒviiij. *Misce.*

Ft. mistura. Capt. ʒss. ex ʒj. aquæ ante cibum.

When symptoms of gastric acidity predominate the above sometimes checks the trouble, but should they continue the acid must be omitted.

R. *Glycerini Pepsinæ* ʒiiiss.
 Acid. Hydrochlor. Dil. ʒj.
 Tr. Chirataæ ʒss. *Misce.*

Ft. mistura. Capt. ʒj. ex paululo aquæ hora post cib.

In many instances, however, the feebleness of the gastric function will permit the food to remain so long in the stomach that secondary fermentative changes occur with the production of large quantities of lactic, butyric and other organic acids, under which circumstances the administration of hydrochloric acid is a mistake. This drug can never exert any real local antiseptic action on the ferments in the diluted strength in which it is only permissible to prescribe it. Creosote or Carbollic Acid may be substituted for it in 1 or 2 min. doses.

Papain is clearly indicated in such cases, as it will act as a digestive in the presence of a marked alkaline reaction ; this enables the physician to correct the organic acidity and at the same time to hasten the retarded digestive process. The following combination is the most valuable routine remedy under such circumstances, and indeed under most of the conditions met

with in chronic gastric ailments even when organic lesions are present:

R. *Papain. Purif.* gr. iij.
Sodii Bicarb. gr. xxx.
Mag. Carb. Pond. gr. xx. *Misce.*

Ft. pulvis. Mitte tales xxiv. St. i. ex paul. lactis ter die p. cib.

As soon as the atonic state of the stomach has given way to dilatation the question of lavage, massage, &c., must be considered; the condition then may be regarded as having passed out of the category of a simple dyspepsia or chronic gastritis into that of a gastric neurosis (which see).

In the irritative condition of the dyspeptic stomach as shown by the small red clean tongue, with a tendency to nausea and loss of appetite, vegetable bitters do more harm than good, probably because more or less catarrhal inflammation is present. The treatment should consist in the employment of gastric sedatives, amongst which Bismuth stands high, though its virtues are greatly overrated. Other gastric sedatives should always be combined with it, as in the following:

R. *Bismuthi Carb.* ʒiv.
Acid. Hydrocyan. Dil. ʒss.
Liq. Morphie Hyd. ʒiss.
Mucilaginis Recentis ʒij.
Aquæ Chloroformi ad ʒviii. *Misce.*

Fiat mistura. Cpt. cochleare mag. p.p.a. ter die ante cib.

The drug may also be given with advantage as a cachet in 30-gr. doses, with $\frac{1}{18}$ gr. Morphia, or the above Papain powders may be prescribed, with the addition of the same quantity of morphia to be taken within an hour after meals.

In either variety of simple dyspepsia the tendency towards acidity should be checked by diminished supply of carbohydrates and by giving freely undercooked red minced meat, as in the Salisbury treatment.

Constipation will usually require treatment, as the sparely fed dyspeptic patient is nearly always constipated; Aloes or Cascara as described in the article on Constipation, will afford the best results. The occasional use of a natural purgative mineral water is also beneficial. Anæmia should be corrected by Iron, but this drug must be cautiously used in the irritative type of the condition, as it is liable to increase gastric distress, in which case it may be prescribed as Reduced Iron in a keratin-coated pill.

The dyspepsia caused by chronic valvular lesions and cirrhosis of the liver, which lead to passive congestion of the gastric mucosa, must be met by remedies directed against the primary disease combined judiciously with the administration of gastric sedatives and digestive ferments. The same remark applies to the dyspeptic condition so often caused by chronic renal affections and other toxæmic states, which must be relieved by eliminatory treatment.

See also under Gastric Inflammation, Gastric Neuroses, Acidity and Gastric Dilatation.

EAR, Diseases of.

Only a mere outline of the treatment can be given.

EXTERNAL EAR, DISEASES OF.

Eczema of the auricle and meatus often exist together and may be acute or chronic. Its treatment differs in no way from that of eczema in other regions. When the auricle alone is affected, in the acute stage, Zinc Ointment to which 30 mins. Liq. Plumbi F. to each ounce are added should be freely smeared over the affected skin, and lint also coated with the ointment should be applied. When the acute stage has passed, 1 dr. per oz. of Liq. Carbonis Deterg. with 20 grs. White Precipitate should be added to the unguent.

In acute eczema of the meatus the best treatment will consist in filling the canal with Almond Oil or Liquid Paraffin, mopping this out afterwards with wool, and instilling a few drops of 1 in 40 Liq. Plumbi F. In the chronic stage the meatus should be daily cleansed with warm Boric Acid solution, and after drying with wool a solution of 10 grs. Argent. Nit. in 1 oz. Spt. Ether. Nit. should be freely applied on wool twisted round a probe; after which a piece of lint or wool smeared with the ointment may be loosely packed into the external meatus.

Hæmatoma of the auricle when small in extent may be relieved by the local application of ice; when it is extensive it is best treated by a free incision, and dressing with a weak Spirit Lotion (1 to 5) to which Perchloride of Mercury ($\frac{1}{2}$ gr. to 1 oz.) is added.

Perichondritis should be relieved in the same manner, and after free incision under antiseptic precautions a warm Boric Acid poultice should be applied till pain disappears.

Exostoses, when blocking up the meatus, are best removed by gouging, by grinding down with a dentist's drill, by sawing with the ecraseur, or by inducing caries through the use of the trephine.

Diphtheria, *Erysipelas*, and *Herpetic Eruptions* are treated upon the general principles indicated when these conditions affect other parts of the cutaneous covering; as erysipelas of the auricle and of the meatus is a common result of eczema and otorrhœa, the primary condition must be carefully attended to; a 1 in 5 Ichthyol solution is a good routine application.

Furunculosis.—The presence of small boils in the cartilaginous meatus causes intense pulsating pain and often an acute general inflammation of all the tissues entering into the external ear with mastoid swelling. When the patient consents the speediest method of treating them is to administer a general anæsthetic, and with a sharp knife to make a deep incision into the inflamed spot without waiting for pointing of the abscess. The bleeding should be encouraged by warm Boric fomentations and the meatus flushed with a 1 in 1,500 Perchloride of Mercury solution.

Before incising, leeches to the auricle, followed by hot fomentations, may be tried, and Cocaine—the pure alkaloid *dissolved* in warm oil (4 per cent.)—affords some ease when dropped into the meatus; but to relieve acute pain in the ear, whether from the meatus or the tympanic membrane, the best application is a solution of 10 per cent. each Cocaine and Carbolic Acid in water. A very few drops poured into the ear out of an eggspoon (previously warmed) seldom fail to give relief, but as the pain in furunculosis is due to greatly increased tension in the unyielding structures constituting the meatus, relief of pain by any means short of incision is very disappointing. Stein uses 5 grs. of Resorcin and 25 grs. Cocaine in 1 oz. water, and drops a little into the ear where it is allowed to remain for a short time before being soaked out on wool. MacCuen Smith cleanses the canal with alcohol, and applies tampons of Camphor-Phenol (carbolic acid 45, camphor 55 parts). A 1 in 10 solution of Menthol in liquid paraffin is also often serviceable.

The liability to recurrences is great, and by far the best local after-treatment is the use of a Corrosive Sublimate solution to destroy the staphylococci which produce the furuncles. In the writer's opinion this solution is employed in too great dilution for this purpose. The following may be dropped into the ear once a day and the orifice plugged with cotton-wool moistened by the solution.

R. *Hydrargyri Perchloridi* gr. ij.
 Spirit. Vini Rectif. ʒvj.
 Aquæ Destillatæ ad ʒiiij. *Misce.*

Fiat solutio. Signa.—"To be applied to the inside of the ear on cotton-wool."

Wright's vaccine method is of great value in rebellious cases; the organisms may be cultivated after isolation from the discharge, and a subcutaneous dose of 100 to 500 million of the killed staphylococci should be injected. Rarely, however, will vaccines be needed if the above solution be conscientiously employed. Furunculosis of the meatus has become more common since the introduction of the telephone, and the use of the antiseptic lotion may be employed as a preventive.

Inflammation of the meatus caused by otorrhœal discharges, and not depending upon furuncles, may be speedily relieved by leeches, fomentations, and weak astringent injections, followed by dry Boracic Acid insufflations.

Fungi—Aspergillus fumigatus—are sometimes found infesting the meatus. They may be easily destroyed by the above liquid instilled into the meatus so as to fill the canal, for some minutes after which a plug of cotton-wool moistened by the solution may be inserted. Each alternate day dry Boric Acid may be insufflated.

Cerumen, Epithelial debris and Foreign bodies in the meatus are best removed by syringing with warm water. A new or sterilised India-rubber enema apparatus answers very well, and it is hardly necessary to say that the nozzle should not be introduced *within the meatus*, but should be held within a few lines of its orifice. The auricle when pulled upwards and backwards permits the free flow of water in and out of the meatus, and by persevering for some time, the stream, getting behind the cerumen or foreign body, forces it out. If this fails, variously shaped instruments devised for the purpose may be used; about the best is a loop of wire, gently coaxed past the obstruction and drawn forwards. Sometimes when the plug has been rotated or tilted forward its edge may be grasped by a fine forceps and the mass delivered, but much harm may be done to the canal or tympanum by unskilful poking, and the novice should content himself with syringing alone.

When there is much difficulty in removing the wax, it will be well to adjourn operation for a time, as prolonged syringing sometimes causes faintness, tinnitus, and deafness owing to congestion or extravasation in the labyrinth. The introduction of a little solution of Bicarbonate of Soda ($1\frac{1}{2}$ grs. to each drachm) for a few days greatly assists in the removal of the wax. Papain, Glycerin and Peroxide of Hydrogen also assist the disintegration of wax and other concretions.

MIDDLE EAR, DISEASES OF.

Acute Catarrh of the Middle Ear, if severe, will be best relieved by a smart purge and the application of 2 or 3 or 4 leeches to the auricle or over the mastoid, and hot fomentations will encourage the bleeding from the bites, and give further relief. The Cocaine and Carbolic solution mentioned on a previous page may be instilled, but if the pain be very severe and the tympanum found bulging, an incision with a fine, sharp double-edged knife or needle should be promptly made, but this will be seldom needed.

When the symptoms are not very acute, the case often yields to a few inflations of the tympanum by Politzer's bag. By inserting the nozzle of the apparatus well up into the nostril of the affected side, and forcibly injecting air at the instant when the patient

is in the act of swallowing a little water, the air is driven through the Eustachian tube, and obstructions caused by accumulations of mucus may be easily overcome, but in acute severe attacks inflation should be postponed till the exclusion of pyogenic infection is decided.

As the disease originates in catarrh of the naso-pharynx creeping up the Eustachian tube, the naso-pharynx should be douched with weak saline solutions—Boracic Acid, Chloride of Sodium, Borax, or Bicarbonate of Soda (100 grs. to $\frac{1}{2}$ pint tepid water). It is a good practice to paint the naso-pharynx with a 25 per cent. Argyrol solution daily after flushing with the alkaline solution, and the Chloride of Ammonium inhaler is a valuable adjunct to treatment. Dry Boracic Acid in fine powder may be blown up the nostril by means of an insufflator.

Should the catarrh resist the above treatment, and show signs of passing into the chronic form, the Eustachian catheter may be passed, and a weak astringent solution, if there be evidence of much mucous secretion, should be injected. The strength of the solution varies, but generally speaking about the strength of an eye lotion suffices—viz., 4 per cent. Boric Acid in warm water. If the tympanic cavity contain thickened mucus—the remnants of an acute attack—some experts make a linear incision in the tympanic membrane, and, through the Eustachian tube by means of the catheter, wash out the cavity by a stream of weak alkaline solution injected into the external meatus. Effused products in the middle ear may sometimes be removed by blistering over the mastoid.

Chronic Catarrh of the Middle Ear is to be dealt with on the lines laid down for the acute catarrhal affection; the Eustachian tube being generally blocked, constant inflation of the tympanum by Politzer's method, or the Eustachian catheter, must be frequently resorted to. The condition of the naso-pharynx will also require constant attention, local antiseptic and astringent applications being employed after flushing with saline or alkaline solutions. The Chloride of Ammonium Inhaler may be used several times a day with advantage. In very bad cases the incision of the membrane, and the injection of alkaline solutions, as just mentioned, may be tried, or Leil's operation for division of the tensor tympani muscle may be suggested. Bronner advocates intratympanic injections of 20 or 30 mins. of a 3 per cent. solution of Bicarbonate of Soda, with equal quantities of glycerin and water or paroleine, injected by a Pravaz syringe through the Eustachian catheter, air being blown in afterwards. Another form of treatment is the injection through the Eustachian catheter of a few drops of a solution of Menthol, 20 grs., and Thymol, 5 grs., in 1 oz. Liquid Paraffin.

The presence of adenoids tends to keep up this condition, and their removal is essential to prevent recurrences.

The hygienic surroundings of the patient should be carefully

examined and rendered as ideally perfect as possible. The use of alcohol and tobacco in every form is objectionable in both acute and chronic ear catarrh.

Eustachian Catarrh and *Obstruction* must be treated in the same manner by continual inflation and by the use of the Chloride of Ammonium Inhaler ; this condition is responsible for many of the cases of dry deafness. The deafness following chronic catarrh causing fixation of the malleus should be treated by Oto-Massage and the hypodermic administration of Fibrolysin.

Acute Purulent Otitis Media is the result of the admission of pyogenic organisms more dangerous than those causing simple catarrh, and should at first be treated as if a case of acute simple catarrh of the middle ear, from which at first it cannot be distinguished. If perforation of the membrane has already occurred, there may be afterwards difficulty in getting the opening to close. It is better for this reason to incise the membrane early if the case comes under notice before perforation has occurred. Müller strongly advises early paracentesis ; he succeeded in 23 out of 24 cases, and no after-treatment was required. Constant syringing with warm weak antiseptic solutions (20 grs. Boracic Acid to 1 oz. water) must be carefully done at least twice daily, and oftener when possible, after inflation by Politzer's method, but early inflation before perforation of the tympanum should be avoided.

The naso-pharynx will require antiseptic treatment ; a gargle of 1 in 80 Carbolic Acid, Chlorate of Potash (1 in 40), or a swab of Carbolic Acid and Glycerin 1 in 10, Tincture of Iron and Glycerin (1 in 2) or Argylol solution (1 in 4) may be employed.

Mastoid swelling and tenderness may occasionally be relieved by one deep incision, but when pus is found the more radical operation mentioned later on must be carried out.

Chronic Purulent Otitis Media with its suppurative discharge is nearly always a sequel to an attack of the acute disease with perforation of the tympanum. The majority of cases follow scarlatina and measles. The treatment is tedious and often unsatisfactory, especially as regards the degree of the power of hearing which may remain, but the chief object to be attained is the prevention of the grave conditions which are liable to supervene, such as cerebral abscess, sinus infection, mastoid and meningeal troubles. These can only be avoided by the most scrupulous and persevering attempts at disinfection.

The Eustachian tube must be kept open by Politzer's inflation daily practised, and the patient may supplement this by Valsalva's method of closing the nostrils with the fingers, shutting the mouth and puffing out the cheeks while he swallows air.

Antiseptics should be employed to disinfect the naso-pharynx as a gargle of 1 in 80 Carbolic lotion, or a swab of 1 in 10 Carbolic Acid and Glycerin, 1 in 2 Tincture of Iron and Glycerin, or 25 per cent. Argylol.

The ear should be syringed out repeatedly with warm saturated Boric solution, 1 in 5,000 Perchloride of Mercury, $\frac{1}{2}$ per cent. Lysol, or 5 per cent. Carbolic Acid. Peroxide of Hydrogen is the most effectual disintegrator and cleanser, the 10 vol. solution being instilled when there is cholesteatomatous tendency or solid débris in the middle ear, and the warm lotion used to flush out afterwards. The meatus may then be lightly packed with cyanide gauze after drying, or dry boric acid may be insufflated.

When the discharge is not very profuse an instillation of 1 part of Boric Acid in 30 of strong Rectified Spirit is very efficacious, and this may be employed in most cases after the profuse discharge has been checked by syringing and when the aperture in the drum is extensive.

An artificial tympanum may be extemporised by inserting during the daytime a small tampon of cotton-wool moistened with boric solution or liquid paraffin, which should be inserted as far as the tympanum by forceps, an operation which the patient soon learns to perform himself.

Granulations or small polypoid growths springing from the margins of the tympanic aperture should be cauterised by a fine probe with a little cotton-wool twisted round its extremity, which is then moistened with saturated solution of Chromic Acid or the solid stick of Nitrate of Silver may be applied. Large polypi springing from the inner surface of the tympanum must be dealt with by the snare or curette when these project into the meatus.

Mastoiditis.—When in spite of the above routine suppurative mastoiditis occurs, the surgeon should not wait for subperiosteal pointing of the abscess but proceed at once with the performance of *Schwartz's* operation in order to prevent sinus and intracranial complications. This consists in cutting down on the mastoid through a curved incision behind the ear, and by means of the gouge and chisel the cells of the antrum are freely opened up and all diseased tissue removed, after which the bony cavity, being thoroughly flushed and dried, is to be packed with gauze or drained on ordinary surgical principles.

In many cases the more radical *Stæcke-Schwartz* operation will be found necessary, and this is also indicated for the removal of the condition known as *Cholesteatoma*. It consists in opening the mastoid and by chiselling and gouging, the mastoid antrum, middle ear and attic are converted into one large cavity, out of which all diseased tissue with the remains of the tympanum and the ossicles are completely cleared, after which efficient drainage is to be established, or the cavity being lined with Thiersch's grafts as practised by Ballance, it may be gently packed with gauze.

Necrosis of the Temporal Bone, Extradural Abscess, Sinus Thrombosis and Cerebral Abscess are to be treated by the evacuation of pus through an extension of the last-mentioned operation, according to the anatomical conditions of each case.

For the deafness remaining after middle-ear suppuration causing fixation of the malleus or oto-sclerosis the chief measures are oto-massage (20,000 vibrations per minute) and injections of Fibrolysin subcutaneously. This treatment should only be commenced after the discharge has been stopped by antiseptic measures.

INTERNAL EAR DISEASE.

Labyrinthine inflammation may be the result of pyogenic infection from middle-ear disease, in which case a radical operation upon the lines before mentioned must be promptly undertaken and the labyrinth drained through the vestibule after all necrosed tissue has been removed. Where the disease follows meningitis, simple or cerebro-spinal, there is little hope of recovery from the deafness, the only treatment available being large doses of Iodides, with constant blistering over the mastoid.

The deafness which arises in syphilis is usually due to implication of the auditory nerve, and may be of the congenital or acquired kind. The only hope of restoring function lies in the active treatment of the primary disease by Mercury, and in those cases where the affection shows itself in the late secondary stage inunctions should be prescribed and pushed till the system has become saturated by the drug. Large doses of Iodides should then be pushed to the limits of toleration; these alone or combined with Bromides will usually relieve the vertigo and tinnitus which are commonly present. Blistering over both mastoid regions alternately should be persevered with, and Cheate recommends fortnightly courses of Pilocarpine injected daily.

Internal-ear disease may manifest itself by symptoms which are also sometimes entirely due to trouble in the outer or middle ear; hence treatment cannot be undertaken with any hope of success until the site of the mischief has been determined. This is obvious when we consider the treatment of the most common symptoms—viz. :

Tinnitus Aurium.—When this is produced by a plug of cerumen in contact with the tympanum the removal of the wax will afford speedy relief. When the result of pressure in the middle ear it may be due to cholesteatomata or cicatrices causing deformities of the drum or adhesion of the stapes, &c. When due to internal-ear disease the mischief may be caused by inflammatory conditions in the labyrinth or in the terminations of the auditory nerve, or it may be due to centric causes disturbing the function or affecting organic changes in the nucleus of the nerve or its tracts within the brain. In the majority of these cases all that can be accomplished by treatment is to palliate the distress by large doses of Bromides which fortunately in most instances afford marked relief when the cause of the tinnitus is beyond the possibility of removal. The tinnitus associated with cicatricial

changes in the tympanum, adhesions or oto-sclerosis following chronic dry catarrh or suppurative affections of the middle ear may be greatly relieved and in some cases permanently cured by injections of Fibrolysin combined with the use of oto-massage. French injects 30 mins. subcutaneously and 5 mins. are introduced into the middle ear through the Eustachian catheter twice a week for twelve times. The accompanying deafness is also improved proportionately, but the tinnitus may disappear under this treatment even when the deafness remains as before and *vice versa*. The tinnitus produced by quinine, aspirin and salicylates does not always disappear upon withdrawal of the drug; this is especially true when deafness remains as in those who take large doses of quinine for malaria.

The tinnitus of arterio-sclerosis, valvular lesions, anæmia, plethora and other circulatory disturbances should be met by agents directed against the primary cause. The toxic tinnitus of chronic Bright's disease yields to purgatives and other eliminatory measures, and as already stated the symptom usually accompanies syphilitic disease of the internal ear, and yields to Iodides and Hg.

Auditory Vertigo.—The same remarks in the main apply to the treatment of this common symptom, which is also frequently due to the above causes acting in such a way as to produce increased tension in the labyrinthine fluid. The resulting giddiness is often associated with tinnitus and followed by vomiting. The best routine treatment when the primary cause cannot be removed is to purge freely and put the patient upon full doses of Bromides.

Ménière's Vertigo is the name given to the symptom-complex in which paroxysmal attacks of vertigo, tinnitus and more or less persistent deafness are always present. The causes are various and practically identical with those already mentioned as factors in producing tinnitus and vertigo, and hence it is often described simply as aural vertigo. The name was originally applied by Ménière to the vertigo, deafness and tinnitus caused by labyrinthine hæmorrhage, and the term is usually restricted to those cases of internal-ear trouble when the triple symptoms are unassociated with otorrheal discharge. As the most potent factor in the majority of cases is probably an irritative lesion involving the terminations of the vestibular branch of the auditory nerve in the ampullæ, the indications for treatment are to reduce the hyperexcitability of these and at the same time to render more stable the equilibrium of the co-ordinating centre in the cerebellum. Both these indications are fulfilled by bringing the patient under the influence of full doses of Bromide of Sodium. In hæmorrhagic cases Pilocarpine hypodermically with blistering over the mastoid may be tried. As the deafness progresses and becomes complete the vertigo tends to lessen and disappear, though the tinnitus may remain.

The treatment of *Nervous Deafness*—viz., deafness arising

from disease of the auditory nerve or its centre apart from ear disease—is practically beyond the reach of medicine, except in the syphilitic cases as already mentioned. Hyperæsthesia of the auditory nerve or Hyperacusis is the opposite condition, and may be functional as in hysteria, when it will yield to Weir-Mitchell and other recognised measures ; if organic as in cerebral tumour and meningeal affections when large doses of Iodides fail to give relief, Bromides combined with Antipyrine may be tried advantageously.

ECLAMPSIA—see **Puerperal Convulsions**.

ECTHYMA—see **Impetigo**.

ECTROPION.

The treatment of this condition, which is also known as Eversion of the eyelids, may be conveniently considered along with that of the opposite state—Entropion, or Inversion.

Ectropion of muscular or spastic origin is often met with in the lower eyelids of patients who suffer from chronic swelling of the conjunctiva. The affection in its early stage usually yields to the free use of astringent eye lotions as Sulphate of Zinc (1 gr. per oz.) or Boric Acid (8 grs. per oz.). As seen in the lower lids of senile patients it is due to a displaced position of the lachrymal punctum caused by loss of tone in the skin of the cheeks and in the orbicularis muscle. When treated early these cases usually yield to conjunctival astringents and slitting of the canaliculus.

In very chronic cases various more radical operative procedures must be undertaken ; thus where there is much thickening of the conjunctiva a long narrow slip of the marginal portion is to be dissected from the lower lid, and the remaining healthy conjunctiva, after freeing it from underlying tissues, is to be attached by sutures to the lid at its margin as in the Freeland-Fergus operation, or an attempt may be made in less chronic cases to procure the same result by application of the solid stick of Nitrate of Silver or by the galvano-cautery. In the absence of hypertrophied or inflamed tissue the lid may sometimes be restored to its normal position by Snellen's sutures without a cutting operation.

Swanzy recommends Kuhnt's operation in senile ectropion ; this consists in shortening the lower lid by splitting it in its central portion into two layers, out of the posterior one which contains the tarsus and conjunctiva a triangular piece with its base along the free margin is then excised, and the lips brought together by sutures.

The ectropion which follows burns and ulcers of the face can only be remedied by a careful dissection of the cicatrised tissue which enables the displaced lid to be restored to its normal position, in which it is maintained by sutures, whilst one graft

of skin or a number of Thiersch grafts are attached to the raw surface exposed by the dissection.

ENTROPION, or inversion, when spastic, sometimes, but very seldom, may in slight cases be remedied by a temporary fastening of the lower lid in its normal position by strapping. When due to senile changes a long strip of skin, including the fibres of the orbicularis muscle along the margin of the lid, should be excised and the margin of the lid loosely sutured to the skin wound so as to draw the lid outwards as the cicatrix shortens. The marginal fibres of the orbicularis should be at the same time divided at the external canthus. A better result is obtained in severe cases by avoiding sutures altogether. Holtz's operation is more reliable, when the upper lid is affected; it consists in making a longitudinal incision at some distance from the margin of the lid for its entire length, and after removal of muscular fibres the margins of the skin wound are attached by sutures to the tarsal cartilage.

In entropion caused by thickening of the conjunctiva and deformity of the tarsus following granular ophthalmia, a wedge-shaped portion of the cartilage will require excision by Snellen's operation. An incision is made for the entire length of the lid and a strip of orbicularis muscle is removed and a long triangular or wedge-shaped piece of the tarsus cut out by a sharp knife, after which, by careful suturing, a complete eversion of the margin of the lid is effected.

In Berlin's operation an incision is made at a short distance along the margin of the lid dividing skin and conjunctiva, after which an oval strip of the tarsal cartilage with its conjunctival covering is excised and the wound sutured.

In less severe cases the operations suitable for *Trichiasis* or *Distichiasis* are indicated.

Arlt's operation consists in splitting the lid into two layers for its entire length, after which an oval flap of skin is dissected out at a short distance from the margin of the lid without removing the fibres of the orbicularis and bringing the edges of the skin wound together. The margin of the lid with its inturned hairs is everted or tilted forwards.

In Von Milligen's operation the lid is split into two layers, as in Arlt's method and into the entire length of the upper part of the resulting hiatus, which is kept open by sutures, a thin strip of mucous membrane dissected from the inner aspect of the patient's lip is adjusted with a probe or held in position by a few sutures when necessary. This forms a new edge to the lid between the globe and the line of the inverted eyelashes.

ECZEMA.

The treatment of this common skin disease too often presents to the young practitioner a hopeless task when he surveys the enormous number of formulæ vaunted as specifics. This con-

fusion is not lessened by a perusal of the pathological literature of the disease, some authorities persisting in the view that the main factor in the disease is a constitutional cause, whilst others regard it as a purely local phenomenon. The truth lies in neither of these views ; a state of the blood, like gout, for example, undoubtedly causes a condition of the skin in which trivial local irritation may bring on an attack of eczema which cannot be removed by purely constitutional agents, but which may speedily yield to local remedies. In every case, however, though local applications must be considered as more important than constitutional remedies, every departure from the normal standard of health must be closely investigated and rectified.

The microbic theory of eczema maintained by Unna is certainly true as regards the pustular type, in which secondary pyogenic organisms are grafted on the original skin inflammation, but the acceptance of a microbic cause of the disease in its ordinary forms only leads to failure in the treatment of these.

If the reasoning of the writer which he has applied to the problems of the treatment of such symptomatic conditions as dyspepsia and diarrhoea be exercised in regard to eczema the treatment of the numerous affections labelled as "eczema" becomes greatly simplified. Many of these latter are nothing else than the local manifestations of irritating stimuli applied to the skin from accidental contact with unsuspected vegetable, animal or chemical substances, or from the exposure of the part to changes of temperature, mechanical irritants, &c. It would be quite as rational to regard the effects of such irritations as examples of true eczema as it would be to label the results of a rubefacient liniment by the same title, and the teaching of Walker may be accepted when he states regarding these forms of dermatitis "that the more one knows about skin diseases the fewer cases he finds it necessary to label eczema."

Constitutional Treatment.—The diet of the eczematous subject should be carefully attended to ; as a rule it should be generous and varied, and made to embrace a good supply of fresh properly cooked vegetables and not an over-abundance of animal food. Certain articles of diet have been so commonly found to increase the irritability of the diseased skin that they should be rigidly proscribed ; amongst such are salted meats, spices, shellfish, fresh pork, pickles, cheese, raw sweet fruits, sugar and coffee. As the effect of other articles in some patients is so easily demonstrated by experience the individual peculiarities should serve as a guide. Thus, some subjects feel that the smallest sip of wine, in a very short time after being swallowed, produces tingling and itching in the seat of the eczema, and this is especially true if the head, face, or neck is affected. Upon the whole, stimulants must be allowed in very sparing quantity, and, where indicated, whiskey is the best. Acid wines are especially hurtful, and beer, as a rule, should be forbidden. In the presence of

dyspepsia, or other gastric trouble, the dietary suitable to the patient's needs must be prescribed.

The hours of labour, rest, exercise and sleep, the clothing, sunshine, cookery, etc., must be seen to when found to be faulty, and the general hygienic surroundings improved when possible ; thus change of air, scene and occupation affords marked benefit in some cases, but a bracing sea air or sea voyage is not to be recommended without serious misgiving, and sea bathing is generally harmful.

Any abnormal conditions present in the organs or secretions must be rectified. Thus dyspepsia, or acidity, should be counteracted by appropriate remedies, and constipation by laxatives or purgatives. The use of these latter in chronic eczema is universally acknowledged. Salines are especially valuable. Rubinat, Friedrichshall, Hunyadi Janos Waters may be used. There is no better saline than White Mixture, containing 2 drs. Epsom Salt with 30 grs. Carbonate of Magnesia in each wineglassful, given early in the morning whilst fasting, so as to produce one or two copious motions of watery consistence ; or the following may be prescribed : *Magnesii Sulphatis*, ʒijss. ; *Ferri Sulphatis*, ʒss. ; *Acid. Sulphurici Dil.*, ʒij. ; *Aquæ Destillatæ*, ad ʒxvj. ; *misce*. *Signa*.—"A large wineglassful to be taken in half a tumblerful of water every second morning, and to be repeated in three hours if the bowels be not well moved." The saline should be occasionally preceded by a good dose of Blue Pill, given at bed-time.

Where there is a dry skin and scanty urine with furred tongue and anorexia, an effervescing mixture containing 1 oz. Bicarbonate of Potash and 1 drachm Acetate of Potash, dissolved in 10 oz. water, may be given in effervescence in doses of 1 oz. with $\frac{1}{2}$ oz. fresh lemon juice three times a day.

Anæmia should be remedied by small doses of Iron, and in chronic cases associated with enlarged veins and a weak heart or diseased mitral valve, the eczema of the lower extremities is much improved by a combination of Iron and Digitalis.

Sedatives may be called for to allay itching and sleeplessness, but opium, morphia, or chloral should be used for this purpose with the greatest caution. (Chloral may be more safely administered to children when the itching is very severe.) Trional, in 20-gr. doses, may be tried, but large doses of the Bromide of Sodium (30 grs.) allay restlessness, without producing any untoward results ; it may well be combined with Hyoscyamus, and the itching is sometimes relieved by a small dose of Gelsemium, or Antipyrine.

Of all the numerous drugs supposed to act through the blood on eczema, none can be regarded as possessing any real specific action. The usual rule is to give Tartarised Antimony in the acute and subacute types and Arsenic in the chronic stages, and, whatever difference of opinion there may be regarding the value of both these drugs in the early stages, there should be no doubt

about the beneficial effects of arsenic in very chronic scaly eczema, and the nearer the disease approaches in character to psoriasis the more valuable is arsenic. The writer never prescribes it under any circumstances for acute eczema, or even for the chronic weeping type of the disease. 3 to 5 min. doses of Fowler's solution are sufficient, and these amounts should rarely be increased. There is little to be said in favour of the Cacodylate and newer compounds of arsenic. Turpentine has gained some reputation, but its value is doubtful. Pilocarpine has been advocated in the forms of eczema associated with great dryness of the skin. Where there is much oedematous swelling following the eruption in acute erythematous cases Chloride of Calcium possesses almost specific action in checking the local anasarca. Robert-Simon has reported striking success in the treatment of eczema by subcutaneous injections of fresh Sea Water, beginning with 30 c.c. increased to 50 c.c. of a mixture of sea water 2, fresh water 5 parts, which form an isotonic solution. The sea water is taken in sterilised flasks from deep areas 20 miles from the shore, and must not be sterilised by heating; the site of injection which he recommends is that behind the great trochanter, and the injections are given as a rule every three days and the eczematous surface treated by dressings of cold boiled fresh water or zinc and lard ointment.

Thyroid Extract has been much recommended. Rocaz has reported marked benefit from the administration of the drug in the eczema of infants and young children, especially in the arthritic type of the disease. He begins with $\frac{3}{4}$ gr. increased within 10 days to $1\frac{1}{2}$ grs., and he employs local applications only as an auxiliary to this treatment.

Local Treatment.—Local measures must constitute the main treatment in all cases of the disease. The long list of remedial agents proves that there is no specific for eczema—no royal road to its successful treatment—though there are few diseased conditions so susceptible to improvement or permanent cure. The secret of success in treating eczema lies for the most part in the ability of the physician to use the proper remedy at each varied stage of the disease. The class of agents so valuable in the acute are worthless in the very chronic stages, whilst remedies of un-failing power when used in the chronic cases are fraught with serious danger when applied at the earlier stages of acute cases. The physician who wishes to treat the protean forms of eczema with success must learn to be patient, ever remembering that in the majority of cases the progress towards recovery is a slow one, and having fixed firmly before him the principle upon which his treatment is based, he should be content to wait till his local remedy has had time to act, before its failure is accepted. The constant chopping and changing of applications from day to day is one of the great causes of failure in the management of chronic or acute eczema.

Acute Eczema should be treated as dermatitis. Only the blandest and least irritating of applications should be applied. Any attempt at treating the disease by antiparasitic agents at this stage is certain to seriously aggravate matters. The first step should be to cleanse the surface of all crusts or dried secretion, and for this purpose Chamber's method of applying lint soaked in Normal Saline Solution, covered over with impervious tissue, is perhaps the best. The writer's practice has always been when possible to cleanse the part by gentle and patient mopping of it with cotton-wool soaked in pure Olive Oil. When the crusts are hardened into scabs, a more efficacious method is to apply warm Boric Acid compresses; even then soap may be necessary, but the use of this cleanser must be dispensed with as soon as the scabs have been detached, and it should if possible never be resumed till the disease has been conquered. Afterwards an overfatted basis soap must be employed. During the progress of the treatment any hardened secretion which from time to time forms may be gently removed by friction with an oiled swab.

Having got the diseased surface free from all accumulated débris, the important problem must be decided of whether a dry powder, an aqueous lotion, a paste, or a fatty ointment is to be employed. This will to a great extent depend upon the amount of secretion or exudation present. The usual practice is to employ lotions at this stage, and to prohibit greasy or oily applications, but this rule should not be too rigidly followed. Lotions when there is abundant exudation are certainly preferable, but the difficulty must always be kept in mind that as these should not be covered in by oiled silk the lint on which the lotion is applied must be kept continuously moistened. If this be done by simply pouring the lotion upon the lint the latter filters out the insoluble ingredients and only permits of the aqueous menstruum coming into contact with the diseased skin, unless the raw surface be exposed to the air every time the lotion is reapplied. Another serious objection to their employment is due to the fact that as the lint dries during the night a covering is left in contact with the exuded surface, which firmly adheres to it and which is often removed with difficulty even when thoroughly wetted.

These considerations are frequently lost sight of by those who thoughtlessly adhere to the hard and fast law that lotions must *always* be employed throughout the acute stages of eczema, and it is not an uncommon experience to find that by persisting in this lotion method the disease is often aggravated by the mechanical irritation caused by the stiffened and dried lint rubbing against the raw surface during the night and by the traction required in the morning to remove the dressing, which often causes pain and sometimes produces bleeding.

Dry dusting powders and pastes are not open to the above objections, but they tend to cake into hard masses which are not easily removed, and occasionally the physician will find that

he can best obviate this by a combination of both methods, employing alternately a lotion containing in suspension the same powder as has been dusted on previously.

In eczema of the face a lotion like the following dabbed on frequently with a small sponge and allowed to dry is not open to the above objections, which only apply when lint and bandaging are resorted to :

R. *Calaminæ Præparatæ* \bar{z} ss.
 Spt. Vini Rectificati \bar{z} ss.
 Aquæ Rosæ ad \bar{z} x. *Misce.*

If the lotion be applied upon lint and covered over with oiled silk, the drying difficulty disappears, but the moisture would have the effect of a continually applied poultice, which would keep the diseased skin in a sodden state and retard indefinitely the healing process—a practice which should never be followed.

The objection to ointments is that they make a more or less impervious dressing under which the retained secretion is imprisoned, thus aggravating the eczematous condition, but this can be largely met by prescribing them in a creamy or semi-liquid form.

The writer avoids the above difficulties in a given case of acute eczema with abundant exudation by using a lotion which contains no insoluble residue and which therefore can be repeatedly employed for moistening the lint without exposing the eczematous surface, the liquid being frequently sprinkled on over the dressing. The following combination is suitable; the small quantity of glycerin is insufficient to cause irritation and prevents the stiffening of the dressings. Some dermatologists employ a 1 per cent. solution of Picric Acid in the same manner in all acute weeping eczemas :

R. *Liquor. Plumbi Fort.* \bar{z} ij.
 Spt. Vini Rectif. \bar{z} iv.
 Glycerini \bar{z} ij.
 Aquæ Destillatæ ad \bar{z} x. *Misce.*

As soon as the exuberance of the secretion is checked by the above application an ointment of soft consistence may be freely smeared lightly over the part which should be covered with lint coated over also by the ointment, and a light gauze bandage applied to keep it in place without using undue pressure.

Of soothing and astringent ointments for this purpose there is no end. The physician will be wise who selects a simple and well-known substance whose strength may be varied to meet

the requirements of each case as experience dictates ; the following is suitable in most instances :

R. *Ungt. Zinci Ox.* \bar{z} iv.
 Liq. Plumbi Fort. \bar{z} ij.
 Olei Olivæ \bar{z} iv. *Misce.*

or *Cremor. Frigidi* \bar{z} ij., *Calaminæ Præp.* \bar{z} ij.

In many cases Lassar's Paste is undoubtedly a most valuable application, and it is not so open to the objection of caking which holds in the case of pastes devoid of a greasy basis, and it is free from the drawbacks of a stiff waxy ointment since it contains so much absorbent powder. Its composition is Oxide of Zinc 48, Powdered Starch 48, Salicylic Acid 4, Vaseline 100, and this may be modified to suit the requirements of each case. With this paste Lassar envelopes the entire body of an infant suffering from acute eczema, after having previously washed it, and touched any bleeding spots with a solution of Caustic. The face, head and joints are smeared over with a 2 per cent. ointment of Salicylic Acid in Vaseline, and muslin bandages are firmly applied. In the very acute stage the salicylic acid had better be omitted, and sometimes a $\frac{1}{2}$ per cent. of Menthol may be added to subdue itching.

The true vesicular and erythematous types of acute eczema may be treated upon the above principles, varied to suit the changes which may arise by altering the ointment from time to time to a lotion or dusting powder, should the discharge become very profuse or crusts form. The pustular form will also yield to the same remedies, but the crusts must be periodically removed during ointment treatment by the free use of lotions and the occasional application of a 1 in 2,000 Perchloride of Mercury solution. The addition of 10 grs. to each ounce of Zinc and Lead ointment of Hydrarg. Amm. Chlord. is a valuable means of destroying the secondary microbic infection without increasing the inflammatory action.

Of the powders used in the treatment of acute eczema the following may be mentioned as suitable when the profuse secretion prevents the employment of an ointment—viz., powdered Starch, Arrowroot, Carbonate of Lead, Carbonate of Zinc (Calamina), Carbonate of Magnesia, Powdered Fuller's Earth, Kaolin, Cimolite, Emol, Kieselguhr, Oxide of Zinc, French Chalk, Bismuth Oxide, Nitrate or Carbonate, Lycopodium, Powdered Rice and Talc, and these may be mixed in various proportions, according to the amount of astringent required, the lead being the most active in this respect. Where itching is smart, Camphor in fine powder should be added to the above in the proportion of about 10 grs. to each ounce of powder.

No mention has been made of Tar in the above routine. This is the sovereign remedy in chronic and scaly eczema, but though

it relieves the itching in the acute form of the disease its application is fraught with danger, owing to its stimulating properties when used early. In the late stage of acute eczema its use is clearly indicated, but the physician must feel his way cautiously, beginning with not more than 15 mins. Liquor Carbon. Deterg. to each ounce of the lead and zinc ointment.

It is safer to alleviate itching by internal remedies like Antipyrine and to educate the patient to relieve pruritus by scratching the sound skin vigorously at a safe distance from the seat of the eczema, which often affords considerable relief. A small percentage of Menthol or Camphor added to the ointment employed is often efficacious, but it must be omitted if the inflammatory mischief is increased. 1 per cent. Picric Acid solution often relieves the itching of acute discharging eczema without increasing the vascularity.

When the acute attack does not speedily resolve under the above treatment, more stimulating measures will be called for, and it may clinically be regarded as a case of subacute or chronic eczema, and treated accordingly.

Chronic Eczema.—Whether this has originated in an acute attack which has proved rebellious to treatment or has commenced in a chronic insidious process before coming under observation, applications of a more stimulating nature are demanded. The list of local remedies for chronic eczema seems almost without end. The old drugs, which have stood the test for ages, are after all better, more certain, and more innocent than their modern rivals. Thus Tar, Mercurials, and Lead will cope, if skilfully handled, with most chronic forms of the disease. Upon the whole, ointments will be found more convenient and efficacious than lotions, though these latter are indicated under special circumstances. If there be very much exudation or moisture, the greasy nature of the ointment keeps the secretion in contact with the irritated surface. In some cases this is a serious drawback, and the discharge is, of itself, an irritant, and prolongs the mischief. In these cases a lotion containing an astringent must be first used to check secretion, as in the treatment of acute cases.

After an appreciable effect has been obtained in this direction, a stimulant like Tar can be combined with the astringent lotion. The amount of stimulating ingredient must be small at first, and gradually increased, the physician cautiously feeling his way before employing strong remedies. A Tar ointment or lotion which may soothe and quickly heal an itchy, dry eczema, associated with much infiltration, may act like fuel to the fire when applied to a moist, weeping, red eczema. It is therefore a good rule, with chronic, weeping eczemas of this kind, to begin with Lead lotions containing a sedative to allay itching and heat; afterwards Tar can be safely used.

Liquor Plumbi Fort. in water (1 to 40), to which a $\frac{1}{4}$ part of

Laudanum or Camphorated Spirit is added, soon allays itching and diminishes secretion, but the number of cases in which an astringent ointment cannot be used instead is small. Liquor Carbonis Deterg. (1 to 40) may be added to the above lotion with advantage.

The best routine treatment in all chronic eczemas is application of the following ointment :

R. *Liq. Carbonis Deterg.* ʒij.
 Liq. Plumbi ʒj.
 Hydrarg. Ammon. Chlor. ʒss.
 Lanolini et Vaseline. ana ʒj. *Misce.*

The strength of each ingredient may be varied to meet the special indications in each case. Thus, if the secretion be very profuse the amount of lead may be doubled and the tar lessened ; should there be dryness, with scaliness, the tarry ingredient may be safely doubled in amount, whilst the mercurial may be equally increased. The writer's advice to the practitioner is to adopt this ointment, and use it in *every* case of subacute or chronic eczema which he meets with in the first years of his practice, till he becomes thorough master of the remedy and can alter its proportions to suit the varying stages or varieties of the disease, and the chance is that he will very seldom feel the necessity of resorting to anything else.

Papular dry eczema is very rebellious to treatment ; the best routine is to employ a tar lotion (1 in 8) in the daytime and the above ointment at night, omitting the lead ingredient. Coal tar is preferable to wood tar, being less irritating, but many dermatologists prefer birch tar (*ol. rusci*), beech tar (*ol. fagi*), juniper tar (*ol. cadinum*), pine tar (*pix liquida*). Sutton advises the use of *crude* coal tar, and in very chronic scaly cases he applies it undiluted. The B.P. *Liq. Picis Carbonis* is the official representative of the old *Liq. Carbonis Detergens* ; both are saturated alcoholic solutions of coal tar. Creosote and Carbolic Acid are preferred by some, and a whole series of Naphthol derivatives have been employed, but they are certainly inferior. The official *Ungt. Picis L.* is too concentrated for ordinary uses.

As with arsenic internally so with tar externally, both drugs give their best effects in scaly dry eczema, and the nearer the case approaches to psoriasis the better the results obtainable from tar, but all forms of chronic eczema should be treated by it. When tar fails in the weeping chronic type of eczema, it will be due nearly always to being applied in too concentrated form. Hutchinson regards Tar as the one remedy for eczema. If he uses two, they are Tar and Lead ; if three, Tar, Lead and Mercury.

Powders are as a rule unsuitable even in the red weeping examples of the chronic disease, but occasionally they may be

applied for short periods. Pastes sometimes may be employed. Lassar's may be used as the vehicle for any of the above-mentioned more active remedies, and the jellies, plasters and salve muslins introduced by Unna may be also employed with advantage.

Ichthyol is undoubtedly a valuable drug. Unna uses 10 or 20 per cent., or Sulphoichthyolate of Ammonia, 2 per cent., which may be incorporated with the paste of Lassar. Morris states that, like Resorcin and Sulphur, its antiparasitic qualities are undoubted. It allays itching, destroys parasites, contracts the cutaneous vessels and checks discharge, hence he uses it also in the treatment of acute eczema.

The moist stages of all eczemas are treated by Pick with his Salicylic Soap Plaster (5 parts of Salicylic Acid to 100 parts of liquefied Soap Plaster). When a weaker and more adhesive plaster is required, he mixes $2\frac{1}{2}$ parts of the acid with 20 of Olive Oil and 80 of Soap Plaster. These are spread upon strong calico, cut into strips, and firmly applied to the moist surface, where they may be allowed to remain undisturbed for several days. The itchiness is replaced by a burning pain, which rapidly disappears. Four days suffice for the first application before removal. Subsequent dressings may remain one week each or longer. After the scaly stage is reached this is treated by painting with Sublimate Gelatin prepared by dissolving 30 parts of pure white Gelatin in water over a water-bath, and evaporating the liquid solution till its weight is reduced to 75 parts; 25 parts of Glycerin and .05 Perchloride of Mercury are then added. This method of Pick's is very suitable for the chronic eczema common in the legs.

As Lead preparations are indicated for their astringent action where there is much weeping, and Tar for its stimulating action in sluggish cases, so Mercurials are indicated for their alterative action where the wisdom of employing tar is doubtful—*i.e.*, in subacute cases where there is still much redness, irritability, and some induration; afterwards they may be combined with Tar to great advantage, but they should not be employed where a very large surface is affected. A dilute solution of the Bichloride (1 gr. to 3 oz. water) is an excellent alterative, and may be used with great advantage as a lotion where crusts, scabs and dried secretion cover over and irritate the already inflamed surface. The best of all the mercurial preparations is an ointment of the white precipitate (of the strength of about 20 to 30 grs. per oz.).

Dilute Citrine Ointment (1 in 8) or Yellow Oxide is sometimes very valuable, and Calomel, in similar proportions, often acts well. These mercurials may be combined with Zinc, Lead, Tar, or other remedies. The Unguentum Metallorum, containing Zinc, Mercury and Lead, is a favourite with many skin specialists. It may be made by mixing equal quantities of the B.P. Zinc, Acetate of Lead, and Citrine Ointments.

To entirely change the sluggish nature of the diseased action in chronic weeping eczema excellent effects are often obtained by painting the surface with solution of Nitrate of Silver (30 grs. per oz.), and a favourite solvent for the caustic is Spt. Ether. Nit. For a similar reason in chronic very dry eczema, painting over the patches with Blistering Liquid or Liquor Potassæ sometimes gives good results, and contrary to what might be expected it often relieves all pruritus and tingling. This really causes an acute dermatitis which can then be treated as a case of acute eczema by soothing remedies. Other irritating applications of milder nature are used in dry eczemas for the same purpose as Pyrogallie Acid and Chrysarobin (30 grs. per oz.), Alcoholic Solution of Soft Soap, Salicylic Acid (40 grs. per oz.), strong Alkaline lotions, Chloral, Eucalyptol, Thymol, Iodine, etc. Thickened epidermis may be removed by Salicylic Collodion, Resorcin, or a paste made with Papain or Pancreatin.

In seborrhœic eczema Unna uses Resorcin. He states that there is no stage, no region, no age, no skin, nor any complication in which this drug may not be used, save in those rare cases of resorcin idiosyncrasy. He gets the best results from a solution of 1 part of Resorcin and 1 part of Glycerin in 18 of strong spirit. Thin layers of cotton-wool are soaked in a mixture of 1 part of this solution with 4 of water, laid upon the part and covered with oiled silk. The horny layer swells and soon all thickening and induration pass away after the resorcin has been stopped and a greasy ointment applied to finish the cure.

The list of agents employed in chronic eczema might be prolonged indefinitely, but the physician who selects the older remedial agents, as Lead, Mercury, Tar and Zinc will be surprised to find how seldom he will fail to cure with them, and how seldom he will have to seek the newer drugs for the relief of symptoms or complications.

Many very chronic cases of scaly eczema with much induration have been successfully treated by the X rays and also by the high-frequency current.

The recognition of the principles discussed and a careful adherence to the details already mentioned will enable the student to treat eczema upon whatever part of the body it may be located, without a special description of the treatment of each of the so-called special local varieties of the disease.

The most tedious form of chronic eczema is that known as *eczema madidans*—the red weeping variety which attacks the legs especially in patients having varicose veins. This is the same type of disease found elsewhere, only modified by the abnormal local circulatory conditions, which also tend to produce ulcers. It cannot be treated by any local applications with hope of success unless the passive congestion of the integuments be removed by rest in bed with elevation of the lower limbs. A good routine is to employ a Tar and Lead lotion (2 parts Liq. Carb. Deterg.

and 1 part Liq. Plumbi F. to 20 parts water), and after exudation has been checked and all crusts removed to bandage the leg over lint smeared with the lead, tar and mercury ointment already described. The occasional application of the solution of caustic in Spt. Ether. Nit. (30 grs. to 1 oz.) often works wonders. When the patient is permitted to move about in the later stages of the treatment Unna's Zinc Gelatin should be melted and brushed over the limb. This forms an elastic coating of great value in the treatment of all eczemas of the lower extremities and of ulcers of the legs. It consists of Gelatin 4, water 16, Zinc Oxide 6, and Glycerin 12, and with it various antiseptics and astringents may be incorporated.

Patients who cannot lie up with eczema of the lower extremities may often be successfully treated by the ordinary remedies applied on lint and covered up by the Martin rubber, or preferably by a woven rubber bandage.

Eczema of the genital regions and anus should be treated upon the same principles as guide the physician in the management of the disease in other parts, but owing to the greater sensibility of the cutaneous nerve supply and to the moisture of the skin in this neighbourhood much pruritus and intertrigo are always present. The treatment should be prefaced by a careful examination of the urine for sugar, and if this be found a rigorous diabetic dietary must be instituted. When there is much discharge present a Lead lotion with a small percentage of tar is indicated, but owing to the difficulty of applying this unless the patient takes to bed a dusting powder must be freely used, any caking following being remedied by the application of the lotion at night. At a later stage the use of Lassar's paste with the addition of Tar and Lead may be resorted to, but the Zinc, Lead and Tar Ointment answers in most cases, all folds of skin being carefully separated by pieces of lint smeared on both sides with the ointment. In women, leucorrhœal discharges may be the exciting cause, and the condition of the vagina and uterus must be seen to. Pruritus, when severe and not yielding to tar, may be relieved locally by the addition of Menthol or Camphor to the ointment and occasionally warm stupes, cocaine being contra-indicated. Internal sedatives, or a Morphia suppository may be used, and sometimes counter-irritation over the lumbar spine affords relief. Anal pruritus may be relieved when due to eczema by the use of the tar and lead ointment substituting Ungt. Conii for the vaseline and lanolin basis. (See under Anus—Pruritus of, p. 51.)

ELECTRIC CURRENT INJURIES—see under **Lightning Injuries**.

ELEPHANTIASIS.

The subject has been dealt with briefly under Chyluria, both conditions being the result of filariæ: the scrotum or legs are the parts usually affected, and it must be remembered that cases of

apparently typical elephantiasis may present themselves for treatment in patients who have never been out of Britain. As the disease when uncomplicated does not tend to shorten life, operative measures should not be undertaken till the tumour has become a serious inconvenience from its mechanical pressure or weight. When the leg is alone involved much may be done by keeping the limb elevated at night and wearing a woven rubber bandage all day to keep up firm pressure. The surface of the diseased skin is liable to ulcerate where pendulous folds come into contact with each other, hence the most scrupulous cleanliness must be observed. The practice of mercurial inunctions, biniodide of mercury ointment, blistering, ligature of the femoral artery, etc., has been abandoned, and no known drug has any effect upon the causal filariasis or upon the blocked lymphatics. Recently, Castellani has reported favourably of deep injections of Fibrolysin into the buttock combined with tight bandaging of the limb. In mild cases permanent benefit may be obtained by Handley's clever operation of *lymphangeioplasty*, which consists in introducing deeply into the subcutaneous tissue of the affected part several strands of stout silk thread, which are to be left buried *in situ* after their proximal extremities have been drawn upwards and also buried deep in the normal subcutaneous tissue nearer to the trunk: the lymph is drained by their capillarity, and enters the circulation above the affected part. As the tissues are often infected with staphylococci or other organisms, Vaccine therapy must first be resorted to. Where ulceration has destroyed any considerable portion of the integument of the limb amputation of the leg or thigh may be demanded.

Handley's operation may be successfully employed for the relief of the elephantiasis which sometimes follows the removal of glands in the axilla and groin (see under Lymphangitis), and the writer has had very satisfactory results from its performance by A. B. Mitchell in a case of similar nature in which blocking of the lymphatics of the orbit following erysipelas caused such permanent œdema of the lids as to totally obstruct vision. The writer had tried Fibrolysin injections in this case without any benefit. When the elephantiasis involves the scrotum or labium, and the tumour grows to enormous proportions, it should be removed by a careful dissection of the hypertrophied mass from the surrounding healthy tissues by a bloodless operation, after elevation and the application of elastic ligatures to the base of the growth.

Elephantiasis Græcorum is of true leprous origin, and must be treated as leprosy.

Elephantiasis Neuromatosa of Virchow caused by overgrowth of nerve tissue, which finally involves the skin and subcutaneous tissue, can only be treated palliatively by elevation and bandaging or by the radical operation of amputation.

EMBOLISM.

Since emboli are usually caused by the detachment of a thrombus in the interior of a bloodvessel or in the cavities of the heart, the preventive treatment when the thrombotic process is known to the physician to exist will consist in the most absolute rest possible to the affected part in order to avoid the detachment of blood clots. Thus in the inflammation of the veins which is so common in the lower extremity the utmost precaution must be maintained to secure immobility of the limb until the thrombus has become organised or absorbed. Friction and massage are answerable for many deaths by detaching large emboli from the interior of inflamed varicose veins. Once these have reached the right side of the heart, little can be done to relieve the sudden asphyxia, as death may be almost instantaneous when the plug is large. If the patient survive the initial shock, the hypodermic injection of Strychnia to keep up the ventricular contractions, and of Ammonia by the veins with the faint hope of aiding the absorption or solution of the embolus, may be resorted to ; and Oxygen when available may be useful, especially in the later stages of pulmonary infarction. The ideal treatment of embolism of venous or arterial origin would be the free administration of Citrates to cause solution of the clot, but the mechanical effects of the plugging are usually too urgent to permit time for this, though in hepatic, splenic, or renal infarction such treatment may be practicable.

Embolism of the superior mesenteric artery or vein, like thrombosis in the same vessel, may be treated by abdominal section and resection of the bowel.

In emboli originating in the walls of arteries or in the left side of the heart the immediate results arise from the cutting off of the arterial blood supply from the brain or limbs. The treatment of Cerebral embolism is discussed in the article on Apoplexy. When the main artery of a limb is occluded gangrene is liable to follow, but by absolute rest and warmth to the part it is sometimes possible to avoid this when the collateral circulation is free, though the artery be completely blocked, the blood finding its way into the main trunk beyond the obstruction through anastomosing branches.

When the embolus is septic, as in ulcerative endocarditis, the condition recognised as arterial pyæmia supervenes, and the after-consequences of the breaking up into abscesses of the infected plug must be met by the usually accepted principles which should govern the treatment of septic infections, though such cases are almost necessarily fatal notwithstanding vaccine treatment and the free administration of Sulphocarbolates.

Air Embolism occurs sometimes in surgical operations involving large veins about the base of the neck or axilla, and should always be prevented by clamping the vein on the proximal side before cutting it. Once air has been drawn in by the open mouth of a

divided vein or through a buttonhole incision in its coats the only resource open to the surgeon is to block the opening instantly with his finger and to prevent syncope by lowering the head and injecting Strychnine or Ether hypodermically, and if the symptoms continue to inject serum.

Fat Embolism sometimes follows fractures and operations involving the marrow of long bones. It may not give rise to any symptoms, or the asphyxia may be so great as to demand prompt treatment. The heart must be assisted by the hypodermic administration of Strychnine or by stimulants given by the bowel, the aim being to keep the patient alive till the fatty material has been eliminated by the kidney or expelled along with bronchial mucus in the frothy or blood-stained expectoration. Oxygen is safer than artificial respiration, and the intravenous injection of serum may be requisite.

EMPHYSEMA OF THE LUNG.

This diseased condition being the outcome of attacks of bronchitis, asthma, whooping cough, &c., especially in subjects who have been born with a deficiency of yellow elastic tissue in the walls of the pulmonary infundibula, the problem of *prevention* is of more importance than is that of cure. Unfortunately, however, there is no means of recognising or detecting the congenital developmental error till dilatation of the air cells and of the interalveolar passages has already occurred under one or more bronchial attacks.

Judicious treatment will in most instances reduce or confine it to its original sites in the lung if the existing cause can be removed. Hence the importance of climatic treatment which by preventing attacks of bronchial catarrh may save the pre-disposed patient from a life of invalidism. An equable warm atmosphere as free from dust and winds as possible should be selected along the South Coast of England for residence during the winter months. If experience proves that the patient's bronchial trouble is best suited by a dry atmosphere, Sicily, Egypt, or Algiers as a winter resort, or South Africa or South Australia may be selected as a permanent home.

In young subjects the presence of adenoids and abnormal conditions of the nasal and naso-pharyngeal regions should be seen to, as asthmatic troubles may sometimes be averted by early operative interference. The hygienic surroundings of the patient, whether at home or abroad, should be carefully supervised; an open-air life with protection by suitable clothing against changes of temperature, the avoidance of late hours and crowded rooms, and a generous mixed diet with regular hours for meals, exercise and rest are essential. As regards exercise, whilst this need never be curtailed, all athletic performances which cause high thoracic pressure, as football, feats of endurance on the land and in water as well as shorter spurts in running, must

be forbidden. Obstinate constipation by acting in the same manner is injurious, and must be met by appropriate drugs.

Amongst the artisan class who cannot change their residence a change of occupation will be imperative ; all those occupations which entail the breathing of a dusty atmosphere, or which cause pulmonary strain as in glass blowing, must be abandoned. Playing on wind instruments is also most injurious to the weakened air cells.

The treatment of bronchial attacks in emphysematous patients is a very important matter ; coughing which might be left unchecked in robust subjects may do serious mischief when once the dilatation and degeneration of the air cells have become established. Under Bronchitis the various indications for the use of remedies have been discussed and need not be here repeated ; suffice it to say that though the employment of narcotics or sedatives must be avoided in all cases of bronchial catarrh it will, amongst the emphysematous, be always wise to prevent *unnecessary* coughing. This rarely can be accomplished without danger by the use of narcotics, even Heroin being objectionable. The aim of the physician should always be to act upon the bronchial secretion so as to render it more fluid and therefore more easily expelled by ciliary action. The best routine drug for this purpose is Iodide of Potassium or Sodium combined with Ammonia ; when the patient is obviously coughing more frequently than is necessary for the mere expulsion of the secretion Heroin or Morphia in small amount may be added to the iodide mixture. This method is often as efficacious in the treatment of bronchitis with profuse ropy secretion as it is in dry catarrhs. In thin delicate subjects, especially those suffering from the chronic lobular pneumonia following whooping cough and measles, there is no routine combination equal to the Syrup of Iodide of Iron administered in conjunction with Cod-Liver Oil.

Breathlessness in severe bronchial attacks occurring in emphysematous patients may be relieved by Oxygen inhalations, and when the element of spasm is present Lobelia and other bronchial antispasmodics may be prescribed, but the practice of drenching such patients with nauseating doses of hippo, apomorphine and tartar emetic, for long periods is most injurious owing to the condition of the dilated heart and to the tendency towards degeneration of the elastic tissue already present. Cardiac dilatation should be met by heart tonics and Strychnine.

No drug is known which exercises any specific action upon the dilated air sacs ; Arsenic is, however, extolled by many, and some authorities believe that Iodides independent of their expectorant properties have the power of at least retarding the degenerative process. The combination of these agents may therefore have a routine place in the treatment of the accompanying catarrh, and may be used as adjuvants to the following remedial measure—

The Compressed Air Chamber has given excellent results in the treatment of fully established emphysema in the hands of Fowler and others at the Brompton Hospital. The patient is placed in a small chamber into which a free supply of pure air is introduced, which is gradually raised to an extra pressure of more than two-thirds of the outer atmosphere; the stay in the chamber should be at least of one hour's duration under the maximum pressure, which is then slowly reduced during about 20 minutes to the normal tension before the patient emerges. During the stay under pressure the vesicular murmur may be observed to return, the hepatic and cardiac dullness to increase and the circumferential measurement of the thorax to diminish. These effects may be heightened by causing the patient at the same time to expire into rarefied air, but the apparatus for this purpose is necessarily a complicated one, and the results of using the ordinary compressed-air chamber are so satisfactory that the simpler method is considered sufficient. This treatment should be resorted to about 4 times a week, and the stay in the chamber may be prolonged till a couple of hours are spent in it each time.

For the atrophic or small lunged type of emphysema which is simply a part of the senile wasting sometimes observed in old subjects, nothing can be done save what little may be effected occasionally by improved hygienic and dietetic measures.

EMPHYSEMA (Surgical).

This is usually the result of injuries in which the thorax has been compressed or when a rib has been broken, the air finding its way eventually into the subcutaneous tissue of the trunk and limbs. Unless the accumulation of air becomes so extensive as to jeopardise life by embarrassing the action of vital organs, the case had better be left alone, as absorption always takes place spontaneously in three or four days. When the condition has been general, the entire body being affected, bandaging of the limbs may be necessary from the toes to the chin, a stout pad being placed over the site of injury. Should suffocation threaten, the skin may be tapped by a Southey's trochar and canula in several places at once, or a number of small punctures with a tenotomy knife may be made.

EMPHYEMA.

After the detection of a purulent collection in the pleura by the hypodermic syringe or exploring needle, its immediate removal is imperative even in the absence of all symptoms, chiefly on account of the risk of the lung becoming so fixed and bound down by adhesions that expansion may never occur.

In *children* the pus is commonly the result of pneumococcal infection, and aspiration of the contents may effect a permanent cure without resorting to a free incision. The needle of the

aspirating apparatus should be inserted through the sterilised and anæsthetised skin anywhere in the mid-axillary line from the fourth to the eighth rib, selecting the middle of an intercostal space or close to the upper border of a rib. The fluid should be slowly pumped or siphoned out as the patient lies upon the sound side, with the head slightly raised. Should severe coughing occur the aspiration may be suspended without withdrawing the needle till the pulmonary embarrassment passes off. If examination of the pus reveals only the presence of the pneumococcus, there is a fair hope that the fluid may not return, but even a second tapping may be tried before resorting to incision.

In *adults*, whether the exploratory puncture proves that the empyema is pneumococcal or due to the influenzal or other pyogenic organism, a free incision should be made, unless, when owing to a very extensive collection of fluid the heart is greatly displaced and there is much pulmonary embarrassment, a slow tapping may be done to relieve immediate distress, with the intention of opening the chest after 24 or 48 hours' rest has been obtained.

The Operation by Incision.—A general anæsthetic will usually be necessary; the patient is placed on his back and slightly rolled over on the sound side, the skin having been previously sterilised. Since purulent accumulations are sometimes localised, or adhesions of the pleural surfaces may shut off or divide the abscess cavity, the surgeon should invariably before making the incision introduce the needle at the exact spot which he intends to incise. If this be done there need be little hesitation in the selection of a site; the best for most purposes is the sixth or seventh space in front of the posterior axillary line, or in the eighth or ninth in the line of the scapular angle if the ribs be not too close together. The incision should be free, and should run close along the upper border of the rib for at least 2 inches; after the cavity has been entered the lips of the wound should be widely dilated by dressing-forceps, and after the evacuation of the pus the finger may be inserted when this is possible, to break down adhesions and prepare for the insertion of the drainage-tube. This should be as large and stout as possible, and should have a flange or collar to prevent its slipping backwards into the cavity. It is often advisable to insert two such tubes side by side.

Resection of one or more ribs will be necessary if these are so close together as to prevent the insertion of a drainage-tube with walls of sufficient thickness to prevent the tube being nipped. Most surgeons prefer to resect a rib as a routine step at the beginning of the operation. There are several advantages obtained by this procedure. Thus it permits of the incision being made farther back and thus affords a better drainage ground, and the opening being larger the finger can be used to break down adhesions and large fibrinous flakes or masses can be

readily evacuated through it. Moreover, by deciding on resection the original incision, which should be about 3 inches, may be made directly over the rib and, its periosteum being divided, $1\frac{1}{2}$ or 2 inches of the rib may be resected before opening the pleural cavity without dividing the intercostal artery. After incising the pleura the finger should be thrust into the opening so as to partially block it and retard the flow of pus, so that syncope or dyspnoea may be avoided by a too sudden fall of intrathoracic pressure. After the evacuation of the purulent collection a large drainage-tube with a flange or a piece of rubber tubing with a large safety-pin fastened at its external orifice should be left *in situ* and covered over with several layers of antiseptic gauze or wool to absorb any further discharge, and the patient should be made to lie on the affected side.

The after-treatment is conducted upon the general surgical principles applicable to the management of any large abscess, the utmost precautions being taken to prevent infection of the wound or pleura by any germs introduced from without during the changing of the dressings. These may have to be replaced frequently during the first 48 hours, and at a later stage every or every second day. The patient should be directed to take deep inspirations for several minutes at a time in order to assist in expanding the lung, or the simple spirometer may be used for this purpose. Irrigation of the cavity is seldom required and may be fraught with serious dangers if the outflow should become blocked. After the discharge has ceased to become purulent, the tube should be removed, and the cavity and wound permitted to heal by granulation.

In cases where operation has been too long delayed and the lung has become permanently bound down by adhesions, and especially in empyemas of tuberculous origin where the pleura is greatly thickened a large unyielding space is left, which fails to fill up by granulation, the more serious operation of *thoracoplasty* is indicated; or this may be demanded in rare cases of failure after the ordinary resection method. The Estländer-Schede operation consists in the subperiosteal resection of several inches of a number of ribs (from the third to the seventh as needs be) and removal of the thickened parietal pleura, periosteum and intercostal muscles so as to permit of the parietes falling in and obliterating the space. In very chronic cases where the lung is found to be firmly bound down in the vertebral groove its thickened visceral pleura will require incision and peeling off; Delorme peels off the thickened visceral pleura from behind forwards in order to secure as full expansion as possible of the collapsed organ. After the peeling forwards of as much of the thickened pleura as can safely be accomplished, the cavity is packed with antiseptic gauze and covered over with the large skin flap reflected in the first stage of the operation, the loosened pleura being secured to the margins of the skin wound.

During the slow healing process after empyema operations the patient should as soon as possible be wheeled out into the open air when the climatic conditions are favourable, and a change to a warm seaside resort when practicable should be insisted upon. He should be fed on a dietary such as is indicated in the treatment of chronic phthisis.

Vaccine treatment is undoubtedly of value in hastening recovery, and is especially indicated in those cases when the lung has been perforated and where large quantities of pus are being expectorated. The mixed micro-organisms detected in the sputum should be investigated, and the opsonic index for each determined by examining the blood condition, and the organism for which the index is lowest should be injected after the principles of Wright's method. The old sinuses left after the operation, especially in chronic tuberculous empyemata, often heal up completely upon resorting to the injection of Beck's Bismuth Jelly or Bismuth-Vaselin Paste (1 in 3).

The older methods of Revilliod, Fagg and Bülau by tapping and keeping up *continuous* siphonage through a rubber tube whose end was dropped into a basin of antiseptic solution placed under the patient's bed have given way to resection and incision ; they are still occasionally employed in the treatment of pneumococcal empyema in children, but should be abandoned, though this siphonage method of once emptying the pleural sac in young subjects and then closing the punctured wound may be often advantageously resorted to instead of aspiration.

EMPYEMA OF GALL BLADDER.

The treatment of this and of empyema of the pericardium, mastoid cells, and collections of pus in other cavities, will be found under the headings of the diseases in which they occur.

ENDOCARDITIS.

The treatment of inflammation of the lining membrane of the heart may be regarded as that of acute valvulitis occurring in rheumatic fever, though the condition may occur in scarlatina and other infections and as a terminal event in renal and many chronic diseases.

Its *prevention* in acute rheumatism is a most important element in the treatment of that disease. Absolute rest in bed as soon as the diagnosis has become established must be insisted upon ; and that this will sometimes prevent the complication of endocarditis in rheumatic fever is probable, but the subject must not be confused in the mind of the physician with another of still greater importance and about which there should be no doubt entertained. This is the question of *prevention of permanent valvular disease* once endocarditis has become established ; here absolute rest in bed for a considerable period (2 to 3 months) after the symptoms of endocardial inflammation have disappeared cer-

tainly in a considerable percentage of cases will avert permanent deformity of the valves.

Once the endocardial mischief has declared its presence, absolute rest is therefore also a vitally essential part of the treatment. In carrying out the most extreme degree of rest the greatest difficulty will be found in the evacuation of the bowels; the ideal of the bed-pan often proves a delusion, as some patients cannot use it without violent bearing down efforts, and the physician who will obstinately insist in all cases on its use will often be responsible for serious results which might otherwise be avoided. The writer has personal experience of a physician who well knew the danger of these expiratory efforts, and who nevertheless fractured his fourth left costal cartilage in trying to relieve the bowel in the lying posture. Certainly with patients who cannot use the bed-pan there is less danger in permitting them slowly and with assistance to slide out of bed on to the night-chair. Often the difficulty of evacuating the bowel in the recumbent position on the bed-pan disappears when a smart saline has been administered along with a drug like senna, which increases peristalsis; occasionally an enema will meet the case, provided the contents of the bowel are not firm.

The next question for decision is the administration of Salicylates, and it must be here remembered that nearly every patient in whom acute endocarditis develops has been already receiving salicylate treatment, since this is now the universal routine in rheumatic fever. It is therefore obvious that the salicylate cannot be accepted as a preventive in the ordinary sense of the term, and it is probably certain that it exerts no beneficial action on the inflamed membrane, and therefore cannot be regarded as a specific remedial agent in the treatment of endocarditis. But the endocardial mischief originally started by the rheumatic toxin is greatly intensified by the high fever and general vascular excitement, as well as in a reflex manner it is aggravated by the severe joint pains. These are all relievable by the salicylate treatment, and therefore it should be continued in the presence of the usual rheumatic manifestations. The endocarditis remains after the constitutional excitement and arthritic pains have disappeared, and when the physician finds himself dealing with this alone the case is clear—Salicylates should be stopped, but if fever and pain return at any time they must be recommenced.

The best routine treatment for the endocarditis is the free administration of Alkalies; 60 grs. Bicarbonate of Potash given with a tablespoonful of fresh lemon-juice may be taken 4 times a day in effervescence. Lees' plan of combining in a mixture salicylate and bicarbonate of sodium is a good plan for the routine treatment of acute rheumatism, the former drug can be stopped in cardiac cases when the arthritic manifestations fade. Yeo recommends Salicin combined with Soda.

The effervescing mixture is, however, better, because the citrate of potassium formed by mixing the lemon-juice and alkali together reduces the tendency towards fibrinous deposit on the delicate valvular tissue, and this consideration compels one to avoid the use of Chloride of Calcium, which has unfortunately been recommended as a cardiac tonic in endocarditis. At a later stage the addition of Iodides to the alkali is clearly indicated.

The routine as regards drink and diet is that indicated in the primary disease—fluid nourishment, which should consist mainly of milk alternating with weak soups.

The local treatment of endocarditis is important. Lees strongly advocates the continuous application of the ice-bag over the heart, as recommended by Dreschfield; relief to cardiac pain and distress usually follows, but the writer believes that continuous application of cold eventually increases the vascularity of the underlying tissues, as demonstrated in the experimental researches of Rossbach, who found that ice when applied to the chest caused anæmia of the bronchial mucosa, but when long contact was kept up the opposite—a hyperæmic—condition supervened. If this treatment be selected the application of the ice-bag should be intermittent. It is a valuable agent when employed in this manner in the grave condition recognised as rheumatic carditis, when both the pericardium, endocardium and possibly the entire organ, are involved in the inflammatory process.

The application of a warm linseed poultice, upon which a little Unguentum Belladonnæ is smeared, is an effective remedy, or the extract, rubbed up with Glycerin, may be painted over the cardiac area when there is cardiac pain and distress. Occasionally the application of leeches may be useful.

Blistering by cantharides gives more satisfactory results than any other method of treatment. This plan of treating in a routine way all cases of rheumatic fever was first carried out systematically by the late Dr. A. Harkin, and the writer had many opportunities of observing the results which he obtained by placing a large blister over the cardiac area in cases where no cardiac complications existed. The temperature usually fell rapidly with the pulse-rate, and the joint pains were for a time markedly relieved. This was before the introduction of the salicylate treatment when the physician had no remedy save opium for the relief of the constitutional symptoms. Since then Caton has shown that a blister may be used as a preventive of endocarditis, and of permanent valvular disease when applied after endocarditis has supervened. He applies the vesicant between the clavicle and nipple to the skin supplied by the first four dorsal nerves with the view of stimulating the trophic centres: Sansom applied the blister to the left axilla. In conjunction with blistering Caton insists upon a prolonged rest of 3 months in bed and the steady administration of Iodide of Sodium with occasional doses

of Calomel. It will, however, be wise to combine the iodide with full doses of alkalies.

During the treatment of the later stages especially, salicylates should be avoided owing to their depressing effects upon the cardiac muscle when long continued. Cardiac tonics—Digitalis and Strophanthus—must be used cautiously, and only then when signs or symptoms of heart failure or weakness are present. Though the pulse-rate may be reduced by these agents the strength of the ventricular contractions is also markedly increased, and this will only increase the mischief when the heart muscle is unimpaired. Sudden failure should be met by Strychnine hypodermically and alcohol avoided when possible, since this stimulant whilst temporarily helping the heart usually increases the pulse-rate at the same time.

Tonics like Iron, Quinine and the vegetable Bitters and a change of air and scene are valuable agents in restoring the strength and vigour after the prolonged rest in bed. Exercise should be permitted tentatively at first and with much caution; a return to the active duties of life should be postponed till after the cardiac muscle has attained its normal tone.

The endocarditis occurring during scarlatina, chorea and tonsillitis even where no other rheumatic manifestation is present must be treated upon exactly similar lines.

The presence of pericarditis does not contra-indicate the use of the before-mentioned remedies, though additional agents may be required, as will be found detailed under Pericarditis. It is a good practical rule to assume where a pericardial inflammation is present in rheumatic patients that endocardial mischief always accompanies it.

ULCERATIVE ENDOCARDITIS.

The gravity of this affection is seen in its synonym—*Malignant Endocarditis*—as the indications for treatment may be inferred from its third title—*Infective Endocarditis*. The primary disease of which it is a secondary result may call for prompt treatment. This is sometimes rheumatism associated with previous long-standing valvular disease, erysipelas, pneumonia, gonorrhœa or diphtheria, but as is usually the case the original malady may have disappeared and left nothing but its sequela behind. Nevertheless a careful search should be made in every corner of the body for any focus of infection. The micro-organisms which are capable of producing the disease are probably various, and there seems little doubt that they may flourish as easily in the hollows of decayed teeth as in the vegetations on a diseased valve. It is needless to say all such foci should be removed when removal is possible, as in the case of teeth, abscesses, gonorrhœal discharges, otorrhœa, &c.

As the organisms have found their way already to the heart, various drugs have been vaunted as antiseptics given by the

mouth in order to effect their destruction in the blood. It is very doubtful if any drug can accomplish so much, but Sansom maintained that 30-gr. doses 3 or 4 times a day of Sulphocarbolate of Soda often cured the disease by the action of the free carbolic acid liberated from it in the body. He supplemented this treatment by free inunctions of the acid mixed with oil. Ewart in the same manner employed ointment of Protargol, and suggested the intravenous injections of Perchloride of Mercury. The newer Arsenical preparations have also been tried as in pernicious anæmia, and the results of Ehrlich's compound in this disease are awaited with interest.

Various Sera have been prepared by injecting into the horse numerous strains of staphylococci, streptococci, and pneumococci. These polyvalent sera have been credited with curative properties, but their value seems very doubtful when one reflects that their action is not antitoxic, but bactericidal, and Wright maintains that they destroy the natural immunising powers of the body. The serum is useless unless the immunised animal had chanced to be injected with the particular strain of the organism which is causing the disease in the patient, and they can obviously be of no value in rheumatic cases.

Vaccine methods hold out the only hope of combating the disease effectually, the microbe being isolated from the blood of the patient by making a series of blood cultures; the specific strain is injected subcutaneously in graduated doses of the killed organisms, regulated by opsonic examinations. Already several undoubted successes have been achieved by this method of treatment.

The various complications which arise during the progress of the malady should be treated on general principles; thus the rigors which occur in the so-called malarial type of the disease are to be met with by extra clothing, hot drinks, &c., and the hot stage with opposite measures as in pyæmia and malaria. Abscesses are to be opened when they form; limbs whose main vessels are plugged must be treated as in gangrene, and cerebral embolism met as in apoplexy.

ENDOMETRITIS.

ACUTE ENDOMETRITIS.—This affection may be either puerperal, gonorrhœal or due to infection by a dirty instrument. There is considerable risk in the early stages of generalising or at least spreading the infection by energetic local measures, and while the temperature and pulse-rate are still in the acme of the initial rise and there is much local pain, tenderness and discharge, it is the physician's best policy to play a waiting game and to restrict his activity to constitutional measures. Rest in bed should be insisted on, with light diet and a free saline purge. I think some benefit may be looked for from quinine, given in 5-gr. doses three times a day. A hot sitz-bath for $\frac{1}{4}$ hour helps

to relieve the pain; so do hot-water bags to the abdomen and back. Good effects may be expected from the use of prolonged vaginal injections at a temperature of 110° F. 10 to 15 quarts of normal saline fluid should be used twice daily.

When the temperature and pulse have fallen and the pain and tenderness lessened, the condition may be treated as subacute and other local remedies may be used. The most generally applicable are those which are intended to relieve congestion and promote the flushing out of the uterine vessels with blood. The vaginal douche should be continued, and if the physician desires he may make it weakly antiseptic (1 in 10,000 *perchloride*, *Tr. Iodi* 1 dr. to the quart, *lysol* or *cyllin* $\frac{1}{2}$ dr. to the quart, *borax* or equal parts of *boracic acid* and *soda bicarb.* a teaspoonful to the quart), but he should always remember that the most important constituent of the douche is the hot water. A *tampon* soaked in *boroglyceride* or in *Ichthyol* (10 per cent. in glycerin) may be applied to the cervix every other day for 12 hours at a time. Direct *blood-letting* from the cervix by scarification has been recommended, but is unnecessary if the douche and tampon are thoroughly used. If symptoms persist after some weeks, treat as for chronic endometritis.

CHRONIC ENDOMETRITIS.—In the majority of these cases the endometrium of the body of the uterus is free from infection probably owing to the thorough flushing with blood which it undergoes at each menstrual epoch, and the disease is confined to the canal of the cervix. Very often a cervix thus affected has suffered laceration at childbirth, and a tender cicatrix or a well-marked ectropion of the mucous membrane may be present. Copious muco-purulent discharge, with pelvic pain, uterine tenderness and usually menorrhagia are found as symptoms.

The routine treatment of these cases should take this form: Once or twice a week a speculum should be passed and the cervical canal should be swabbed out with an antiseptic applied on a Playfair's probe coated with cotton-wool. For this purpose pure *carbolic acid* liquefied by heat may be used, or 40 per cent. *formalin*, or *iodised phenol* or *Tr. Iodi*. After the application a *glycerin of ichthyol* (10 per cent.) or *boroglyceride* tampon is introduced into the vagina, and the patient lies up till the following morning, when she withdraws the tampon and uses a douche of from 4 to 8 quarts of one of the antiseptic solutions recommended for subacute endometritis. These may be used of double the strength already indicated. This douche is repeated daily until the next visit to the physician. Cases with much ectropion often do well if treated with *nitrate of silver* solution (20 grs. to the ounce) poured into a tubular Fergusson's speculum and allowed to remain in contact with the cervix for 5 minutes, and followed by daily douches. *Bier's hyperæmic treatment* has been tried for obstinate cases, the suction being applied through a special glass tube made to enclose the cervix, and each applica-

tion lasting for from 10 to 20 minutes. Gonorrhœal cases have been treated by the application to the cervix of strips of plain gauze soaked in a pure culture of the *lactic acid bacillus*, with the object of destroying the gonococcus by the acid secretion formed. *Ionic medication*, carried out by filling the vagina with a solution of copper sulphate and running a continuous current through it, has been tried with good effect. It should not be forgotten that the discharge in many of these cases is partly due to debility, and that measures for the relief of anæmia and malnutrition may be of benefit.

Cases which resist local drug treatment, or which relapse after apparent cure, should be subjected to the operation of *curetting*. This operation should not be undertaken if there is evidence of suppuration in the ovaries, tubes or pelvic connective tissue, as it is dangerous to some extent under such circumstances, and is not likely to have a permanent good effect. It should be combined with the repair of any deep cervical laceration that exists, and if the perineum is torn and the vulva gaping a perineorrhaphy should be done to protect the vagina and cervix against constant exposure to infection from without (see below, Curettage).

NON-INFECTIVE ENDOMETRITIS.—Under this heading we may group a number of conditions in which the presence of an infective agent is either not suggested or not proven, and to which the title of an inflammatory condition suggested by the name "endometritis" can only be applied by courtesy. They may be divided into the following groups:

1. *Conditions Associated with Hypertrophy of the Endometrium*.—These include cases of retroversion with enlargement of the uterus, cases of slight subinvolution of the uterus after abortion or childbirth (often due to the retention of some part of the secundines), cases of "glandular," "interstitial," and "polypoid" endometritis, and are marked by a leucorrhœal discharge with sacral weight and pain, some dysmenorrhœa and menorrhagia. General hygienic treatment, with the administration of iron, should be tried first in these cases. Local treatment on the lines mentioned under chronic endometritis should accompany it, but is not as a rule very satisfactory. Curetting is more successful, and curetting followed by local treatment is most successful of all.

2. *Conditions Associated with Atrophy of the Endometrium*.—As a rule the most marked symptom in this class of case is hæmorrhage, menstruation becoming both irregular and profuse. A few cases of menorrhagia in young women belong to this type, most cases of menstrual irregularity due to the presence of a submucous fibroid, and lastly many cases of irregular losses in the decade from 40 to 50 years of age. It is especially in regard to this last type of case that a word of warning should be uttered. There can be no objection, except that attaching to the probable

failure of the treatment, to a practitioner endeavouring to cure a case of menorrhagia in a young woman by general or local tonics such as Iron, Ergot, Viburnum Prunifolium, Styptol, or the like. On the other hand, *when a woman above 40 years of age consults a doctor for uterine hæmorrhage he is acting in defiance of the patient's interests and of his own if he prescribes for her before he has excluded uterine cancer as the possible cause of the bleeding.* Every physician knows that the only hope of cure in cancer lies in the complete removal of the tumour by operation. Every day during which the tumour is allowed to grow lessens the probability of a complete removal and makes the hope of cure more slender. It is therefore the bounden duty of the doctor to make the diagnosis certain and absolute at the earliest possible moment. No considerations should be allowed to postpone a vaginal examination both with the finger and the speculum, and if nothing is discovered the investigation should not end there. As soon as possible the uterus should be curetted and the fragments examined microscopically by a competent pathologist in order to exclude the possibility of a corporeal cancer. Few patients will refuse to submit to this thorough examination when the importance of it is explained to them, and the assurance may be given that if no serious mischief is present the operation will completely relieve the symptom on account of which advice was sought.

Curettage.—This operation has been frequently mentioned in connection with the treatment of endometritis. It is indicated in cases which resist a thorough trial of local and constitutional therapy or which are improved by it only to relapse. It may be safely recommended when the main symptom is menorrhagia, where the uterus is bulky and rather tender, and when leucorrhœal discharge persists in spite of treatment. It is contra-indicated in all cases of active inflammation of the uterus, and in cases of inflammation of the ovaries and tubes, especially when signs of a collection of pus (pyosalpinx or ovarian abscess) are present. Before performing the operation the possibility of pregnancy should be excluded, and in many cases the operation should be looked upon as merely inaugurating a course of local (by tampons, douche, &c.) and constitutional (tonic and hygienic) treatment, which may be pursued with better hope of success after curetting.

The operation in most cases requires the administration of an anæsthetic for its thorough performance, as the requisite dilatation of the cervix is painful. The most careful antiseptic precautions should be taken, the vulva shaved, washed with soap, and douched with a 1 in 4,000 perchloride or drachm to the pint lysol or cyllin solution, the vagina is then douched, the speculum, which with the other instruments has been boiled and placed in a tray or basin filled with antiseptic solution, is passed and the cervix seized with a vulsellum. The uterine sound is passed to make sure of the exact direction of the canal, and the dilators,

commencing with a 3 or 5 Hegar, are passed through the canal into the cavity of the uterus. Only a minimal amount of force should be used, and the passage, if there be any obstruction at the internal os, should be felt for in the same way as a sound is manipulated through a urethral stricture. After one or two of the smaller dilators have been passed, more force may be safely used. When the canal has been dilated up to 10 or 12 Hegar the sharp curette is passed up to the fundus, and with successive strokes the interior of the uterus is carefully gone over. Only moderate pressure is necessary to remove the endometrium, and too vigorous scraping has been known to result in complete destruction of the membrane with consequent amenorrhœa. After the body has been dealt with the cervical canal should be carefully curetted, and for this a small curette is advisable. The fragments of endometrium should be put at once in a bottle of 4 per cent. formalin and submitted to microscopic examination if thought necessary. The uterus may then be washed out with antiseptic solution through a Bozemann's catheter, and a strip of iodoform gauze introduced as far as the fundus. Some gynecologists swab out the cavity after curetting with phenol or some strong antiseptic on a Playfair's probe, but the oozing after the operation makes such an application very uncertain and partial in its action, and I prefer to postpone it until the membrane has been reformed, when better results may be expected should such a treatment be necessary. Should perforation occur, which may be known by the sudden loss of resistance to the instrument, dilator or curette, and by its slipping through the cervix far beyond the limits of the uterine cavity, no harm will be done if strict antisepsis has been observed. The instrument should be withdrawn at once, no further manipulation should be attempted, a small gauze drain should be passed through the internal os, and the patient put to bed.

The patient should remain in bed for a week, the gauze drain may be removed next day, and daily hot douches should be given—R. J. J.

ENTERIC FEVER—see Typhoid Fever.

ENTERITIS.

Under the headings, Colitis, Diarrhœa, Dysentery, &c., the treatment of the inflammation of various parts of the intestinal tube will be found discussed. As already insisted upon, many cases labelled "enteritis" and treated as such are merely examples of the cathartic action of ptomaines or purgative principles introduced from without, or formed by fermentative or bacterial action within the bowel. These substances produce diarrhœa, which is to be regarded as nature's method of effecting a cure by expelling the irritant which causes the catharsis. After the prolonged irritating action of such products or when the dose

has been a large one, there may be established a catarrhal inflammation or general enteritis, which will require soothing treatment by large doses of Bismuth and astringents like Tannalbin or Tannigen, with opiates—agents which may do mischief in the early stage by retaining the irritants within the canal.

Unless the preliminary purgation be excessive it should be encouraged by mild purgatives of the Castor-Oil type, or an intestinal antiseptic like Calomel in minute and frequently repeated doses. The remarkable success following the injection of Sea Water hypodermically by Robert-Simon's method as applied in the case of infants may be employed also advantageously for adults in colitis and other forms of enteritis, but the dose must be raised to 70 c.c. or even to 100 c.c. every second or third day.

ENTEROPTOSIS—see Glénard's Disease.

ENTROPION—see Ectropion.

ENURESIS—see Incontinence of Urine.

EPIDIDYMITIS—see Orchitis.

EPILEPSY.

Though the trend of opinion is strongly in favour of a toxæmic theory for the explanation of the phenomena of idiopathic epilepsy, this view has not yet led to any advance in the therapeutics of the disease, the treatment being still purely symptomatic or empiric. The management of the patient during an attack, immediately before and after an attack, and in the intervals between the attacks, may be separately considered.

When the patient is seen during an attack of convulsions, the physician should abstain from too active interference; all constrictions about the neck or throat should be removed, and he should be placed flat upon his back if he has not already naturally assumed this position. A soft pillow may be placed under his head, and attention given to the state of his mouth. If the tongue protrudes, a large cork or piece of rubber tubing may be inserted between the teeth to prevent its being injured. Any food or artificial teeth should, if possible, be removed from the mouth. It is useless to make attempts to restrain the movements by forcibly holding down the convulsed limbs; all that can be done is to watch and see that the patient inflicts no injury upon himself during the clonic spasms, especially by hammering his head against the floor or any hard object.

In some cases the following plans have been found to modify the severity of the clonic convulsions, and very occasionally they may avert a threatening attack when resorted to just before the seizure—viz., pressure over the carotid artery upon each side, by thrusting the thumbs deeply against the skin at the root of

the neck, and making firm pressure backwards, or compressing the tissues very firmly between the thumbs and the spine. Nitrite of Amyl may be inhaled, and when the attack is of long duration Chloroform may be administered, but the occasions on which the latter drug is indicated during the attack are very rare. When a distinct aura or warning is experienced the above measures may be tried in order to prevent the attack; the best results are to be expected from the Amyl. Tying a ligature tightly round the limb where the aura is felt, or irritating the region by pinching, pricking or galvanism may put off the seizure. Where contractions of muscles warn the patient that an attack is coming on, prompt forcible extension of the contracted limb sometimes is effectual. Many other means have been discovered and resorted to by patients who experience warnings—thus violent breathing, shouting, jumping, electric shocks, ammonia, and pungent snuff have been utilised by patients who have found their employment to cause postponement of the attack. Counter-irritation to the spot in which the aura is felt, or blistering of the limb above the spot, sometimes prevents further attacks. If any portion of the body is discovered upon which pressure or irritation causes an attack to come on, Brown-Séquard advised counter-irritation of this site.

The management of the patient immediately after the cessation of the convulsive movements should consist in leaving him entirely to the natural undisturbed sleep which usually supervenes; no attempt should be made to arouse him suddenly by shouting into his ear or roughly shaking him. His friends should, however, be warned to watch him for a short time, as sudden homicidal or other impulses in some patients are liable to manifest themselves in the post-epileptic condition.

Several guiding principles for the treatment of the diseased condition between the seizures are agreed upon by most physicians, and these may be advantageously considered before drug treatment is discussed.

Diet.—This should be moderate in amount and varied; over-eating after long fasts is most injurious; the meals should be light, all food being thoroughly masticated and taken at regular intervals of 4 or 5 hours, a heavy supper being especially forbidden. Animal red foods should be restricted unless when the patient is following some occupation which entails free muscular exertion. Fish and poultry afford a good routine, with eggs, fresh vegetables and farinaceous foods; tea and coffee should be used sparingly and alcohol in every form avoided. Many patients do best on a strict vegetarian diet, and this is the writer's routine when the patient can be got to consent to it. Gowers states that no advantage is derivable from a purely vegetarian diet, but he admits that many epileptics find it advisable to abstain from beef. The best and only rational procedure is to educate the patient to change his diet for a month or two at a time and to

keep a correct register of his attacks, from which valuable information may be obtained regarding the most suitable foods for his maintenance. A Koumiss or sour milk dietary may be advantageously used from time to time. A *salt-free* dietary has been shown to be of much value by Richet, as by this means the necessary amount of Bromides may be considerably reduced in the drug treatment of the disease.

As constipation is to be carefully guarded against, this object in the dietary should not be lost sight of, and hence one of the advantages of a vegetarian diet; boiled Spanish onion is a valuable aperient in all cases, and may be eaten freely. As auto-intoxication from the bowel may be the exciting cause of the seizures the intestinal tract must always be kept freely open, and occasional purgation by Salines should be resorted to when the diet fails to accomplish this desideratum.

Hygiene.—The environment of the epileptic has of late years received much attention. An open-air life with abundance of exercise, unaccompanied by the excitement which follows such games as football, cricket or hockey, is essential. Any exercise or pastime which places the patient in a dangerous position during a seizure must be strictly forbidden, as cycling, horse riding, swimming, rowing, &c. This latter remark applies forcibly to the selection of a trade or occupation for the epileptic. An outdoor employment is always to be preferred, and as these are necessarily limited by the last-mentioned consideration the chief haven is that of farming or gardening.

The Colony or Township System meets all the requirements of the artisan and lower middle classes, where an open-air life spent in market gardening or other occupations affords a means of profitably enjoying a useful if uneventful existence. But the benefit of such institutions shows itself even more clearly in the facilities which it affords for the mental and moral training of young epileptics whose backwardness or deficient abilities cannot be improved by ordinary school lessons. The colony system can rescue many such feeble-minded patients from the certainty of their becoming hopeless wastrels. Easy mental exercises can be combined with simple carpentry, basket-making, or other primitive handicraft.

In association with hygiene the problem of marriage may be considered; this should always be firmly discountenanced, and the marriage of a male with a female epileptic should be regarded as little short of criminal unless the female be beyond the child-bearing period.

A very important rule should be enforced upon the physician who undertakes the treatment of an epileptic patient: not only is it a duty to see to the correction of every error in the habits of his patient as regards dietary, regularity of meals, hours of rest, mental occupation, sexual excesses, emotional exercises, &c., but a careful examination must be made for the discovery

of any source of reflex irritation, such as intestinal worms, eye strain, adenoids, nasal polypi, mechanical dysmenorrhœa, scar tissue involving nerve trunks, adherent prepuce, ear troubles, &c. These should all be remedied ; the hygiene of the mouth seen to, and the possibility of masturbation should be delicately inquired into and stopped by moral education.

Drug Treatment.—Bromides stand easily first at the head of all remedial agents employed in idiopathic epilepsy, but their action is probably confined to their power of diminishing the hyper-excitability of the cortical centres without effecting any curative power over the still unknown causal agent in the production of the seizures. As regards the relative value of the salts of bromine little need be said ; where one is markedly beneficial any of the others will also prove efficacious. The best routine practice is to employ the Bromide of Sodium, as its base is less depressing than potassium, when large doses must be given for long periods. 60 grs. may be daily taken in three divided doses of 20 grs. each freely diluted after meals, and this amount may be continued for many months or even years without intermission. Sometimes, but not often, larger doses may be required and some physicians press the remedy till its full physiological effects of drowsiness and loss of the palatal reflex are obtained. It is claimed by many observers that smaller doses suffice when sodium chloride is eliminated as far as possible from the diet, or when Chloral is combined with the Bromide. Valuable information may be obtained regarding dosage by a scrutiny from time to time of the register of the attacks kept by the patient or by an intimate associate for the guidance of the physician in the general management of the disease. The dose should be lessened as the attacks become less frequent, and sometimes when this is undesirable the symptoms of bromism may be minimised by changing from one bromide to another. Bromipin or Brominol which is an additive compound of bromine and sesame oil may often be advantageously substituted for the soda salt in doses of 20 to 30 mins. of the 33 per cent. solution in syrup.

Hydrobromic Acid is extolled by some authorities, but the writer finds it the least reliable of all the bromine preparations.

After a first attack this treatment should be kept up for at least a year since every epileptic seizure is believed to leave the nerve centres more susceptible to further attacks, but should the convulsion recur a prolongation of the treatment for two years after the second or subsequent seizure should be insisted upon. Before finally stopping the bromide, one large dose may be given nightly whilst the day doses are suspended, and a single large dose (60 grs.) may be used at bed-time only when the epilepsy is of the true nocturnal type throughout. The tendency towards acne may be minimised by combining 2 to 3 mins. Fowler's Solution with each dose.

Bromides certainly exercise a much more powerful action over the typical *major* attacks than over *petit mal*, but this does not

mean that they should not be employed in the minor attacks also. One serious difficulty in pushing bromide treatment especially in the latter type of the disease is the appearance of symptoms of mental deterioration which are so liable to supervene; the patient and his friends get convinced that the mental condition is solely caused by the treatment and they sometimes refuse to continue it. It certainly should not be pushed so far in *petit mal* as can with perfect safety be done in the major type of the malady. As soon as the diminished frequency of the attacks as counted by the chart or register demonstrates that the bromide has the disease under some degree of control it may be gradually reduced to 40 grs. per day, and ultimately to 30 grs., but its administration must be kept up for years as a rule. About 1 case in every 10 will be able to dispense with the drug entirely.

Mention may be made of Brown-Séquard's method of using the bromides; he advocated the following solution of mixed bromides with iodide—viz., Pot. Brom. $\bar{3}j.$, Ammon. Brom. $\bar{5}iij.$, Pot. Iod. $\bar{5}ij.$, Pot. Bicarb. $\bar{5}j.$, Tr. Calumbæ $\bar{3}j.$, Aquæ ad $\bar{5}vj.$ Of this a teaspoonful in water was given thrice daily before meals and $\bar{5}iij.$ at bed-time. In *petit mal* the ammonium salt was increased and the potassium one diminished, and he continued this for 8 to 10 years without harm, the dosage of bromide being almost $1\frac{1}{2}$ drs. daily exclusive of the iodide: a tonic bitter with Strychnine or Arsenic was given after meals.

When the patient's register has proved that the bromide possesses no influence in diminishing the number and severity of the seizures other drugs should get a trial.

Borax, according to the opinion of Gowers and others, is the best of these. Before placing the patient upon full doses (10 grs. *ter die*) of this drug it will be wise to test its action in half this amount combined with the bromide. It may in its turn, if it fails, be combined with Tr. Belladonna 10 mins. or $\frac{1}{150}$ gr. Atropine, but it is so liable to upset the stomach and to cause dermatitis that its use cannot be long continued. It is a good routine in the treatment of *petit mal* during the intervals when the bromide is stopped. Nitroglycerin in small oft-repeated doses has sometimes proved of great value alone, or in combination with bromide; if it is to do any good, this will become apparent after 1 to 2 weeks' trial; should it fail, Digitalis may be tried in a similar manner. These drugs are indicated in *petit mal*. Camphor Monobromide is beneficial in both types and is less objectionable than Chloral when an hypnotic is required.

Antipyrine in the major form has proved a valuable adjuvant to bromides, but its use should not be long continued. Flechsig combines Opium with the bromide treatment in alternating courses commencing with $1\frac{1}{2}$ grs. daily, which are gradually increased till 15 grs. opium are taken daily by the end of the sixth week. 2 drs. potassium bromide are then administered every day for the next six weeks, this is reduced to $1\frac{1}{2}$ drs. during the

third course of a month and finally to 1 dr. daily during the next 12 weeks, no opium being given after the termination of the first six weeks. The writer has no experience of this method and would be slow to try it, owing to the danger of establishing the opium habit, but it might be quite safe in hospital practice where the patient was under close supervision.

Belladonna or Atropine alone was Trousseau's routine when bromides failed; he gave the green extract in doses up to $1\frac{1}{2}$ grs. *ter die*. Not more than 1 min. of the B.P. Liquor Atropiæ should be given.

Salts of Zinc (5 grs. of the oxide), of Silver ($\frac{1}{8}$ gr. of the nitrate) of Gold ($\frac{1}{10}$ gr. double chloride), of Copper ($\frac{1}{4}$ gr. ammonio-sulphate), of Cerium (3 grs. of the oxalate), of Nickel (5 grs. of the bromide), of Lithium and Strontium (30 grs. of the bromide), of Calcium (15 grs. of the chloride)—these are but a few of the inorganic substances which have been tried and at times found valuable. But of organic compounds and vegetable preparations there is practically no end. These may be passed over with the exception of those already referred to.

In epilepsy occurring in syphilitic patients the routine treatment after a course of mercury when this drug has not already been freely administered should be large doses of Iodides (60 grs. *per diem*).

Status Epilepticus.—This serious condition in which repeated attacks of clonic convulsions follow each other with alarming rapidity is often fatal. Chloroform should be administered at once and a large dose of Chloral Hydrate (60 grs.) should be given by the rectum. Nitrite of Amyl may be tried at the same time. Gowers has obtained excellent results from the hypodermic injection of a full dose of Hyoscine ($\frac{1}{150}$ to $\frac{1}{50}$ gr.). Bromides are useless, but occasionally a full hypodermic of Morphia is beneficial and blood-letting has sometimes apparently saved life. Where hyperpyrexia is present the cold pack or ice to the spine and head should be employed. If the patient can swallow, full doses of Cannabis Indica with Hemlock Juice may be given or Coniine ($\frac{1}{10}$ gr. to 1 gr.) may be administered by the skin. In the comatose stage with failing heart and respiration $\frac{1}{16}$ gr. Strychnine may be injected, but this drug should not be given in the early convulsive stage.

Other methods which have from time to time been suggested and carried out for the cure of epilepsy may be mentioned. Surgical procedures for the relief of intracranial pressure or irritation have been instituted, even to the extent of removal of a portion of the cortical centres; the results do not justify such operations being undertaken for the cure of the idiopathic type of the disease, and the same remark applies to the heroic procedure of ligaturing the longitudinal sinus in two sections. Alexander's operation for the removal of the sympathetic ganglion and the operation of ligaturing the vertebral or carotid arteries have been abandoned.

Electricity has proved of little value ; the continuous current has been reported as useful when applied for long periods to the thyroid gland in some cases, but the results of the various methods of using the static and high-frequency currents and other forms of electricity are at the best evanescent, and may be attributed to suggestion as in the next procedure. Hypnotism has undoubtedly in mild cases been followed sometimes by a marked diminution in the number of attacks or by a long postponement of seizure when the suggestion has been made to the patient during the hypnotic state that he will not suffer from future attacks, but when a seizure does follow he is possibly rendered more susceptible owing to the blighting of his hopes.

Serum Therapy has been tried, the patient being injected by his own serum or by that obtained from other epileptics, with the chimerical idea of rendering him immune to the influence of the unknown toxin which is supposed to produce the convulsions. Any apparent benefits noticed after the injections are probably due to suggestion, and this remark applies to the old practice of inserting a seton into the nape of the neck, and many other long disused methods of treating the disease.

JACKSONIAN EPILEPSY.—The convulsive attacks which begin in a particular group of muscles following a localised injury of the cranium, such as that in which a spicula of bone is driven in upon the cortical area, or where an adherent cicatrix involves this region, are known as examples of what is styled *traumatic epilepsy*. These focal symptoms are a clear indication for surgical interference, and as long as the convulsions remain strictly confined to the muscles associated with the injured centre there is a fair hope of the success of trephining. To lose time by bromide treatment is a serious mistake in these cases, as once the convulsions have become general as in the idiopathic type of epilepsy there is but a faint hope of success following surgical procedures. This remark holds true for the convulsions caused by a small cerebral tumour located in the cortex of the Rolandic area, which if removed early by a trephining operation may cause permanent disappearance of the Jacksonian convulsions, but even if the tumour be large, palliation of the symptoms may be effected by making a large opening.

EPIPHORA.

The treatment of the different conditions in which the tears flow over the cheek instead of through the nasal duct will depend upon the nature of the obstructing cause. Thus if the punctum be displaced by ectropion or entropion these deformities should be removed by the operations described under Ectropion. Displacement of the punctum without apparent ectropion or entropion is best remedied by converting the minute circular orifice into a slit by the introduction of a fine probe-pointed Weber's knife. Stricture of the nasal duct if present must be permanently

dilated. This may be accomplished by passing a probe down at repeated intervals through the narrowed duct ; to cause wide dilatation the probe may be kept *in situ* for a short time. Astringent solutions may be injected after a very large probe has been used for some time.

Should there be much difficulty in passing the probe, either canaliculus may be slit up for a portion of its extent. This is best done by inserting through either punctum a fine grooved director into the sac along the canaliculus, and slitting up the canal in part or in its entire length. After this any form of probe, medicated bougie, tent or style, may be employed to keep up dilatation. Benson recommends the use of a piece of leaden wire with a probe-pointed extremity, which can be worn in the duct at night and removed by the patient in the morning.

Weber, Stilling, and others overcome the obstruction by incisions made with variously shaped knives, and the actual cautery and the galvano-cautery have been used with advantage to cause obliteration of the entire lachrymal sac after milder measures have failed. The lachrymal sac may be dissected out by Kuhnt's method after the injection of paraffin, and even the lachrymal gland may require removal. When, however, chronic dacryocystitis causes epiphora without any stricture of the nasal duct, the affection may be successfully treated by the patient frequently pressing upon the lachrymal sac in such a way as to force its contents down into the nose, astringent or caustic solutions being employed to relieve the conjunctival inflammation present. Acute dacryocystitis should be treated by slitting the canaliculus or the skin over the sac, and applying Nitrate of Silver freely to its interior.

EPISPADIAS.

This condition, due to absence of the roof of the urethra (the opposite state to hypospadias), is nearly always associated with ectopia vesicæ, or extroversion of the bladder, and the only treatment of any service is a plastic operation, performed by dissecting a flap from the abdominal surface and two flaps from the groins, with a view to cover in the exposed bladder region. After the cicatrisation of these flaps, another plastic operation, as devised by Nélaton, may be undertaken to remedy the epispadias, but the best procedure for preventing the incontinence of urine and the formation of phosphatic concretions in the artificially formed bladder is to transplant the lower end of the ureters into the rectum with their adjoining portions of bladder mucous membrane.

EPISTAXIS.

When not due to local causes—injuries or ulcerations—the bleeding may be a conservative phenomenon, and if slight it should not be meddled with ; thus in plethoric subjects, and in

those suffering from congestive headaches, the discharge gives relief, and measures for its arrest should not be undertaken unless when the flow has already been plentiful. In persistent cases, such as will be found associated with renal disease, purpura, hepatic cirrhosis, &c., attention must be paid to the general condition, and, in addition, the most efficient remedy will be found to be Chloride of Calcium in 20-gr. doses, repeated every 3 or 4 hours.

The patient should be placed on his back, with the shoulders and head moderately elevated and the arms raised as high as possible above the head, whilst pressure is made upon the nostrils by pinching them between the finger and thumb, when usually the hæmorrhage will be found to cease. Should this fail, cold compresses or ice to the temples and occiput, and sinapisms to the calves of the legs, may be tried, or Hutchinson's plan of seating the patient upright in a chair with his feet in a deep pail of hot water may be resorted to. The reflex action following these applications often speedily causes closure of the bleeding vessels through the vaso-motor supply.

When the hæmorrhage continues the nostrils should be washed out with saline solution, and a careful examination made for the discovery of the bleeding spot. This may be touched with the electric cautery at a low heat when found in its most common site (in seven out of every eight cases) on the lower part of the septum at its anterior aspect. A probe dipped in strong Chromic Acid may be applied to the spot. Adrenalin Solution is sufficient in most cases, a pledget of lint or gauze being soaked in the liquid is to be used as a plug for the anterior nares. This drug has displaced all other local astringents, as tannin, perchloride of iron, &c. Cocaine is also efficacious, but recurrences are more common after its use. The writer's routine method was to pack the nostril with Puff Ball, which always succeeds, but it is difficult to keep the parts aseptic, and the adrenalin is therefore preferable when at hand.

The introduction of a rubber bag, which is placed *in situ* in the nostril in the collapsed state and afterwards inflated with air, is a painless and efficient method; it should, like the adrenalin plug, be removed after 24 hours and reinserted if necessary.

Where repeated traumatic hæmorrhages occur from the forcible detachment of hard crusts or scabs from the anterior portion of the nostril in *rhinitis sicca*, the bleeding points should be touched with the cautery at a low heat, and the membrane kept oiled by a thin unguent consisting of 1 dr. Citrine Ointment in 7 drs. Almond Oil. The crusts may be detached by a stream of saline or alkaline solution made to pass through the nasal cavity and out of the opposite nostril, if the palate be elevated by keeping the mouth wide open, and *hot* water may be so employed with great advantage when the hæmorrhage continues, as in post-partum hæmorrhage.

Where notwithstanding the above measures the epistaxis continues, the bleeding spot being situated posteriorly, there will be no resource left to the surgeon but to plug the posterior nares. This is one of the simplest and least painful of operations in the eyes of the surgeon—till he has tried it. Having once performed it, he will hesitate to repeat or recommend it. It should never be undertaken unless the loss of blood is serious, and all other means of checking it have failed. By means of a Bellocq's canula, a thin double whipcord or hempen ligature is passed through the nostril, and one end brought out through the mouth. To this end a compact roll of lint, large enough to block the posterior nares, is attached. Traction upon the cord in the nostril hauls the lint tightly against or into the aperture of the posterior nares, where it is held in position by a plug of lint packed into the nostril in front. Over this plug the ends of the cord may be tied so as to render displacement impossible. It is advisable to leave a piece of string attached to the plug behind ; this may be left hanging in the pharynx, or from the mouth. By pulling upon it, the posterior plug can be easily removed at any time through the mouth.

Some surgeons discard the canula and other paraphernalia and insert the left forefinger into the mouth till it blocks the posterior nares, after which a thin long strip of gauze is introduced anteriorly through the nostril, and by a probe packed firmly against the left finger-tip which is kept *in situ* till the entire nostril is tightly plugged. Another and simpler plan is to insert the nasal rubber bag as far back as the pharynx, and then inflate it strongly to obliterate the entire space.

After the removal of the plug in 24 or 36 hours it is not advisable to resort to syringing or douching as these may start the bleeding again, but if there should be much fœtor a stream of cold saline containing adrenalin may be cautiously used to wash out the nasal cavity, and the patient should be forbidden to blow his nose. A short course of Calcium Chloride may be advantageously resorted to to diminish the risk of a recurrence. When the hæmorrhage has been excessive the usual remedies indicated in anæmia must be employed, and the hypodermic administration of a large quantity of normal saline may be required.

EPIITHELIOMA—see Rodent Ulcer.

EPULIS.

Early removal is necessary, and as the tumour seldom originates in the gum tissue but nearly always in the periosteum of the tooth socket or in the periodontal membrane, it is certain to return unless the alveolar process be removed along with it. A tooth upon each side of the epulis having been extracted, the limits of the incision in the bone may be marked out by two vertical cuts made by a fine saw or chisel. Between these points the growth

and adjacent alveolus is cut out by sharp pliers, any teeth involved in the tumour being brought away *in situ*. Sometimes a wedge-shaped piece of the jaw with the tumour and teeth may be removed by simply making two converging incisions with the saw or chisel. The wound is to be treated by ordinary surgical methods, and after complete healing a dental plate bearing artificial teeth may be employed to remedy the deformity caused by the removal of the growth.

Slight vascular growths obviously springing from the gum tissue should be examined microscopically after excising a fragment, and if found innocent they may be removed by curetting or by the cautery, and sometimes it is possible to extract an involved tooth and replace it in its socket after cleaning out the alveolus.

ERYSIPELAS.

Mild cases of simple and limited erysipelas require as a rule only *local* treatment, but in severe types of the disease *constitutional* measures require consideration. *Constitutional Treatment* will be first considered.

A diet of the most sustaining and easily digested food should be given, solid meats being forbidden till fever disappears. A liberal allowance of good soup, beef tea, or chicken jelly, with milk in large quantity is essential. Alcoholic stimulants are often indicated in severe cases, and it is a mistake to give stimulants alone; when possible, they should be incorporated with the food. Thus, whiskey or good brandy may be mixed with the milk (one wineglassful to each pint or quart); and port wine (one wineglassful to each pint of beef tea) may be freely given. The Mist. Spt. Vini Gal. is an excellent food and stimulant where milk cannot be tolerated. The previous habits of the patient, the stage at which the disease is found when the case comes under the physician's notice, the condition of the heart and vessels, the amount of cutaneous surface involved, and the temperature will give valuable aid in arriving at a conclusion about the amount of alcoholic stimulants necessary. As a rule, large amounts are well borne, especially in erysipelas following operations on intemperate or irregularly living subjects. Mild cases will require no stimulants; they do better without them.

A smart saline purge should be administered in order to thoroughly empty the intestinal canal at the commencement of the treatment. A Mercurial may be given 8 hours before the saline if the patient be robust, but it should not be repeated.

The drugs employed for internal administration are numerous but only a few are worthy of consideration, and since they are given mainly upon the theory that they aid phagocytosis or strengthen the defensive mechanism of the body against the results of the streptococcal organism their place is now taken by the vaccine treatment.

Iron is the most valuable of these, but it must be given in large doses; the older generation of surgeons believed in the almost specific action of 30 to 60 min. doses of the Tincture of the Perchloride, and pushed it even in spite of high fever and furred tongue. It may advantageously be combined with Quinine, or full doses of each may be given alternately with 3-hourly intervals, and the latter drug may be combined with full doses (5j.) Aromatic Spirit of Ammonia when signs of cardiac weakness begin to show themselves. Strychnine hypodermically may be also necessary, or Digitalis may be given with the iron.

The sharp fever of mild cases is easily controlled by Aconite—1 min. of the tincture given every 15 minutes till 10 or 15 doses are taken. This is a favourite method of treating short fevers, and as the entire amount of the drug used should only be equal to one full B.P. dose there is no danger of weakening the heart. The drug should never be used in erysipelas after the first or second day as the toxins then begin to poison the cardiac muscle. Pilocarpine hypodermically has been extolled, but its use is certainly contra-indicated after the second or third day.

Sulphocarbolates, Benzoates, Salicylates and a host of drugs have been administered by the mouth with the idea of destroying the streptococci; there is no evidence that any such action can be obtained from them.

Serum Therapy has been employed since the disease has been demonstrated to be the direct result of *Streptococcus pyogenes* and other strains of streptococci flourishing in the lymph spaces of the skin. A polyvalent serum is prepared by injecting different strains of the streptococci into the horse; this preparation is, however, not antitoxic like the diphtheritic remedy, but acts only as a bactericidal agent. The results are, to say the most for it, very uncertain and usually disappointing.

Vaccine Treatment, on the other hand, has given brilliant results, and life can undoubtedly be saved by it in severe cases which would otherwise prove fatal. When time permits the ideal procedure is to obtain a culture of the specific coccus from the local lesion, and inject away from the seat of the disease 5 to 10 millions of the sterilised streptococci, with half this dose on the following day or days. Ross and Johnson point out that the dose should be in inverse proportion to the severity of the case, mild types of the disease requiring 20 millions and severe ones 5 to 10 millions. The treatment is simplified by the fact that in the great majority of cases opsonic estimations are unnecessary, and that most purposes are served by injecting a stock vaccine prepared from cultures of several virulent strains of the coccus. This can be obtained from the Wimpole Institute in ampoules ready for injection. Wright's routine is to give a 2 million dose every 4 days. As the defensive mechanism of the body becomes strengthened and stimulated by the vaccine the constitutional symptoms and local signs of the disease rapidly diminish.

It is needless to state as the disease is highly infectious to all patients who have open wounds or abrasions of the skin that the most rigid isolation should be insisted upon in hospitals, and especially in lying-in institutions, and the physician in attendance upon an erysipematous patient should not officiate at an accouchement unless he has been most rigorously disinfected.

Local Treatment.—Though mentioned last, this is to be undertaken as soon as the disease has manifested itself, and the choice of local applications is endless, each surgeon preferring the remedy which his own experience has given him confidence and facility in the use thereof. For simple superficial cases the time-honoured plan of freely dusting powdered Starch, Wheaten Flour, Chalk, Zinc Oxide, or other inert powder to cover up the inflamed skin from the air is still followed by many. These agents can be dusted on the skin in a thick layer from a common flour-dredger, and the part covered over by lint, which when the face is involved may be applied as a mask with apertures left for the mouth and eyes. White Lead paint and pastes made with Infusorial Clay, Fuller's Earth, &c., are preferred by others since they are less liable to be brushed off. Watery lotions are less satisfactory, though often used when the swelling is great. Ichthyol is the best routine application, notwithstanding its unsightliness; it may be mixed with an equal amount of lanolin and smeared on with the fingers, or dissolved in its own weight of glycerin it can be painted on the affected region with a feather or soft brush and covered over with lint.

Where there is much smarting and tension the Green Extract of Belladonna rubbed up with twice or three times its weight of glycerin may be applied in a similar manner, but this should not be applied to extensive surfaces owing to the danger of absorption. Small areas may be coated with Carbolic Collodion, Traumaticine or Carbolic Oil (1 in 10).

Duckworth recommends an ointment or paste made by mixing equal weights of powdered Chalk and Lard to which 6 per cent. Carbolic Acid is added, and envelops the part in boracic lint. Antiseptic ointments in endless variety are recommended. The best of these is Koch's, which consists of Creolin 1, Iodoform 4, and Lanolin 10: Creosote, Boric Acid, Carbolic Acid and Iodine ointments are favourite applications.

Antiseptic solutions are also in much favour, as Perchloride of Mercury (1 in 1,000), Permanganate of Potassium (1 in 500), Picric Acid (1 in 100), Nitrate of Silver (1 in 100), Argpyrol (1 in 10), Perchloride of Iron tincture (1 in 4), Hydrogen Peroxide (1 in 20), Sulphurous Acid (1 in 5), Carbolic Acid (1 in 40), Boric Acid (saturated). Tucker treats all cases of facial erysipelas by the application of a concentrated solution of Sulphate of Magnesia under oiled silk.

It is doubtful if any of these antiseptic applications give better results than the ichthyol pigment, since the streptococci lying

in the lymph spaces are not reached by them, but there are good reasons for believing that the *Liquor Iodi* painted on several times a day penetrates the skin. Mario has recently published a very satisfactory series of cases so treated.

Other local measures are employed on a different principle, with the view of limiting the spread of the disease by acting upon its circumferential zone in order to establish an increased protective leucocytosis or phagocytosis. The value of painting the sound skin beyond the thickened margin of the diseased area with a solution of Nitrate of Silver (60 grs. to 1 oz.) was recognised as an empiric method long before the natural defensive mechanism of the tissues was understood. It is still employed and often to great advantage in checking the spread of the disease. The solid Nitrate may be used. Strong Iodine Liniment, Iodised Phenol, Pure Carbolic Acid, strong Bromine solution, Creosote made into a paste with Kaolin and many other powerful antiseptics and caustics are employed in this manner to encircle the diseased area, leaving a ring of healthy skin between the site of their application and the circumscribed margin of the diseased action. The Iodine Liniment is the most reliable of these agents. A further step in advance is to inject by the hypodermic needle weaker solutions of these agents into the skin beyond the diseased margin : Carbolic Acid (10 per cent.), Resorcin (5 per cent.), Salicylic Acid (saturated), Sulphocarbolate of Soda (8 per cent.) may be injected, a few minims being inserted with each puncture. This treatment is painful and not free from danger, but the method of limiting the advance of the erysipelatous margin by the application of Collodion, strips of adhesive plaster, or by the pressure of a rubber band, though often futile, may be tried. A more drastic procedure is to incise the skin by making a number of cross hatchings or scarifications with a vaccination lancet at a short distance beyond the margin of the disease. Judd swabs the skin with a 95 per cent. Carbolic Acid over limited areas at a time, extending for $\frac{1}{2}$ inch beyond the margin, and washes the acid off with Alcohol. All these methods are rendered unnecessary by resorting to the vaccine treatment.

When the disease has attacked a patient after a surgical operation it will be usually necessary to remove some or all of the sutures, and to freely flush the incised surfaces with an antiseptic and to provide for drainage.

Cellulo-cutaneous or phlegmonous erysipelas and diffuse cellulitis or cellular erysipelas are to be treated upon the above lines, and the surgeon should lose no time in resorting to vaccine treatment. In grave cases when a culture of the specific organism is considered necessary, the polyvalent vaccine, or in its absence the antistreptococcic serum, should be at once injected whilst the necessary culture is being prepared. As these types of the disease are usually only met with in alcoholic and debilitated subjects stimulants must be freely given and strong soups ad-

ministered at short intervals. The urine should be tested for sugar and diabetic dietary resorted to when necessary. Large doses of Iron with Quinine are clearly indicated, and the weakness of the heart remedied by *Digitalis* and *Strychnine*.

There is always much brawny infiltration, and the surgeon should not wait for pointing of abscesses, but a number of deep and free incisions into the boggy tissue must be made without delay to save the vitality of the underlying structures, after which warm Boric Acid Compresses should be applied. Poultices are objectionable in all types of erysipelas, but where there is much fœtor or gangrene hot charcoal cataplasms should be applied and renewed frequently, the parts being flushed with Perchloride of Mercury or Permanganate of Potash solution on each change of poultice.

Where erysipelas attacks the mucous membrane of the nose, mouth, pharynx, or larynx prompt measures must be taken to obviate the dangers caused by interference with the breathing and swallowing. Vaccine treatment is essential, though nose cases usually do well by simply painting the inside of the nostrils with the Ichthyol and Glycerin Cream every hour and occasional syringing with Boric Acid Solution. When the disease attacks the pharynx or larynx, scarification must be resorted to early to avoid suffocation from œdema of the tissues, and the bleeding should be encouraged by spraying warm Boric, Carbolic or Saline solution into the mouth and nostrils. Tracheotomy may be imperatively demanded, especially in children, when the disease causes œdema of the glottis.

The mucous membrane of the conjunctiva is sometimes involved in facial erysipelas, and usually yields to warm 4 per cent. Boric douching; but the surgeon should always be on the watch for deep-seated inflammation, and this may be silently progressing under the great œdema of the lids without exciting suspicion. The writer makes a rule of examining the globe from time to time in all cases of facial erysipelas with great œdema of the lids. Orbital cellulitis ending in panophthalmitis and total destruction of the sight has more than once come under his observation as a result of erysipelas of the face. Pus should be evacuated at the earliest moment when evidence of its presence is forthcoming.

The constitutional symptoms arising from the toxæmia of the disease are to be treated on general principles. Thus pyrexia, when not yielding to the Quinine and Iron employed as a routine should be relieved by diaphoretics and tepid sponging. Small doses of Antipyrine relieve the feverishness and also the headache which is often severe. Hyperpyrexia must be promptly met by the cold bath, cold pack, or affusion. Delirium will yield also to these last-mentioned agents when it is associated, as it usually is, with a high temperature. Ice should be applied to the scalp and forehead, and a strong saline purge should be given. In-

somnia should not be treated by opiates ; it is better to remove the condition which is causing it when this is possible. Thus patients often fall asleep after the reduction of the temperature by sponging or after relieving the tension in the œdematous part by punctures or by removing one or more sutures in a throbbing wound. Paraldehyde is the safest of all hypnotics in erysipelas ; next to it come Trional and Veronal, but in mild cases Bromides may be given in full doses. Vomiting, constipation, anorexia, retention of urine, &c., are to be treated on ordinary lines. Rigors are an indication for exploration of the deep-lying tissues, and even when no signs of pus are present a number of deep incisions should be promptly made when the tension in the part is very high. Heart failure, as already mentioned, should be met by Strychnine hypodermically, assisted by Digitalis and Sal Volatile by the mouth.

ERYTHEMA.

The treatment of simple erythema is identical with that of the Dermatitis by which its presence is usually recognised. The first indication is, when possible, to find out the cause and remove it. Thus irritants as strong direct sunlight, contact with dyestuffs, certain plants like *Primula obconica*, the X rays, &c., must be eliminated, after which a mild astringent ointment as Ungt. Zinci, containing 30 min. Liq. Plumbi F. per oz., may be applied. Dusting-powders, as Zinc Oxide, Fuller's Earth, Starch, &c., meet most requirements.

Where the source of the erythematous inflammation is some toxic agent circulating in the blood, as seen in the numerous forms of drug dermatitis following the administration of iodides, copaiba, boric acid, sera of various kinds, &c., the first step in the treatment obviously will be to cease the administration of the offending medicine, when, should the eruption not speedily vanish, the above ointment or a dusting-powder may be applied.

The erythema which follows the use of certain articles of food, as shellfish, strawberries, cheese, pork, pastry, &c., as a rule rapidly disappears after the removal of the exciting cause, but in some instances there may be great difficulty in detecting the causal agent, in which case one article after another must be suspected and eliminated from the dietary, and this should be changed *en bloc* when possible. Thus the most persistent chronic erythematous rash under the writer's care was eventually found to be due to the use of a small quantity of condensed milk which had been preserved by the addition of boric acid or borax. These food erythemas are often associated with urticaria and the formation of large wheals accompanied by intense pruritus (see under Urticaria).

Sometimes after the removal of the offending ingredient in the dietary the erythema tends to become chronic or the cause may

escape detection, when symptomatic treatment will be the only resource left to the physician.

Of drugs which tend to diminish the skin congestion Alkalies are the least objectionable, and Magnesia is the most esteemed of these. They are highly serviceable in those dyspeptic conditions where some irritant produced in the stomach or intestines during digestion is carried to the blood, and hence to the nerve endings in the skin. The primary condition will require dietetic correction, and the following combination often proves suitable. If mild purgation does not follow a smart saline should occasionally be administered. The Tartarised Antimony is supposed to have some specific action on the skin in acute superficial inflammatory conditions.

R. *Antim. Tartarati* gr. j.

Tr. Rhei Co. ʒiss.

Liq. Magnesii Carb. ad ʒxij. *Misce.*

Ft. mist. Cpt. ʒss. *ter die post cib.*

Where there is much œdematous swelling accompanying the rash, as in urticarial cases, Chloride of Calcium in 20-gr. doses three times a day is the best routine.

Itching may be relieved by a weak Lead and Tar lotion as the following :

R. *Liquor. Plumbi Fort.* ʒijj.

Liquor. Carbonis Deterg. ʒiv.

Spt. Vini Rectif. ʒij.

Aquæ Destillatæ ad ʒxx. *Misce.*

A warm bath containing Sodium Bicarbonate is often of much value in relieving the tingling and pruritus, or sponging with the alkaline solution may be efficacious.

Erythema Elevatum Diutinum.—The treatment of this rare and obstinate type of erythema is unsatisfactory and tedious. The best routine is to envelop the affected parts in an unirritating ointment composed of Zinc Oxide with 10 per cent. *Liq. Plumbi Fort.*, and apply a bandage with moderately firm pressure. Salicylate of Soda should be given internally, and a milk diet with farinaceous food and occasional saline purgatives administered.

Erythema Induratum, known as Bazin's Disease, affecting the skin over the calves of both legs, is best treated by prolonged rest and bandaging or strapping, and the ulcers which form should be dressed with weak Creosote or Diluted Citrine Ointment. The affection is believed in many cases to be of tuberculous nature, and vaccine treatment has been recommended. Walker reports most successful results from the X rays, which

treatment can be carried out without resorting to prolonged rest. Open-air life and the most generous diet and tonics should be prescribed.

Erythema Intertrigo.—This is caused by the irritating secretions pent up between two layers of superimposed skin, as under the breast, about the buttocks and scrotum. The affection is easily prevented by separating the layers of skin with a piece of lint dusted over on both sides with Zinc Powder or Fuller's Earth. When the intertrigo has become established the same remedies or an astringent ointment of Zinc and Lead may be applied. In chronic cases a true eczema may develop, which will require Tarry preparations. The *Erythema Gluteale* which affects the buttocks and perineum of infants is of the same nature, and is caused by the contact of urine soaked napkins. This should be treated by the application of a very stiff ointment which will not easily melt, as $\frac{1}{2}$ oz. powdered Starch, $\frac{1}{2}$ oz. Calamina, and 2 oz. Zinc Ointment or Lassar's Paste without the salicylic acid.

Erythema Iris should be treated with Salicylates internally and Lassar's Paste locally. Allan treats this disease as a superficial burn by applying pads of wool soaked in a 1 per cent. solution of Picric Acid. The affection is liable to return at intervals, when the same treatment must be resorted to.

Erythema Multiforme in all its varied types, like the other forms of exudative erythema, when not of true rheumatic origin, may be due to dietetic errors or to the production of toxic substances in the alimentary canal. As the eruption rarely lasts more than a few weeks little need be done locally save by applying a dusting-powder or astringent lotion. Constitutional treatment is of more importance, and the suspicion of its rheumatic origin suggests that Salicylates may be employed as a routine internally. When there is much exudation Ichthyol in 20-min. doses or Chloride of Calcium (20 grs.) may be given three or four times a day, and the dietary minutely scrutinised with the view of discovering some irritating or toxic ingredient. Saline Purgatives are clearly indicated.

Erythema Nodosum is closely allied to the last mentioned. As much pain and tension are usually present local treatment should always be combined with rest in the horizontal position with the legs elevated. The best results are obtainable by enveloping the legs in several layers of warm, absorbent wool, and applying with moderate pressure a light calico or woven bandage from the toes to the knee. Should there be any erythema multiforme also present Salicylates may be given. Mild examples of the disease will require nothing but a coating of Collodion, severer types may be treated by a Lead and Opium lotion applied under oiled silk, and in very painful cases a warm poultice smeared over with the green extract of Belladonna or fomentations of Poppy capsules may be tried, but as a rule moist heat is not so suitable as a dry heat and moderate pressure.

A good routine is that advocated by Brownlie, who paints the nodes freely with a solution of Ichthyol (1 part) dissolved in a mixture of spirit and ether (3 parts).

Erythema Pernio is the name given to Chilblain, and its treatment is detailed under its own heading.

EXOSTOSIS.

Osteomata are essentially innocent growths, and cease to enlarge after maturity of the skeleton, and whether spongy or of ivory hardness should be left alone unless they exert mechanical pressure on neighbouring nerve trunks or other structures. When pedunculated the neck can be cut across with the chisel or saw or snipped in the bone forceps, after which the bony growth with its cartilage is easily removed. When the peduncle is small the growth may be removed with chisel and mallet, gouge, sharp spoon, saw, cutting pliers, or bone forceps. Sometimes after exposure the knife will be found sufficient when the base is fibrous and not bony. The majority of exostoses should be left alone, unless by their presence they are causing disturbance or producing deformity. Hard or ivory growths upon the cranial bones may be removed by freely exposing their bases, and applying from time to time strong Sulphuric Acid to the peduncle till the death of the exostosis is produced. The galvano-cautery may be tried, but it is of little use save in cases which could easily be otherwise treated. A better plan is to perforate the base or neck of the hard growth at several places with the dentist's machine drill, after which it can be easily removed by the gouge or chisel.

EXTRA-UTERINE PREGNANCY.

The modern treatment of extra-uterine pregnancy may be summed up in one word—operation. The only question is when and how, and in settling this question the precise stage in development which the pregnancy has reached must be taken into account.

1. *Unruptured Tubal Pregnancy*.—This condition is rarely diagnosed, mainly because there are no symptoms which would lead the patient to suppose that she is not normally pregnant, and should seek advice. When it is diagnosed the removal of the pregnant tube either by the abdominal or vaginal route should be urged without delay, as there is the ever-present risk of rupture taking place with a fatal result from hæmorrhage.

2. *Intratubal Rupture of the Ovisac, with Death of the Ovum*.—This condition may be diagnosed when the patient gives the history of 6 to 8 weeks' amenorrhœa, followed by pain in the affected side, possibly accompanied by some collapse, and followed by the characteristic brownish shreddy vaginal discharge. The further course of the case may be in one of the following ways :

The ovum may be expelled from the tube completely and the bleeding may cease, leaving the ovum with a few clots in Douglas's

pouch to be absorbed. This is a rare result, and cannot be diagnosed with certainty. It is much the wisest plan to inspect the tube through the abdomen or vagina, to remove it if still bleeding, and to clear out all clots.

The ovum may be expelled from the tube, or may be retained in the tube in whole or in part and the bleeding may continue, the effused blood oozing through the abdominal ostium of the tube and accumulating in the pelvis, forming a *pelvic hæmatocele*, walled in by a layer of fibrin attached to the pelvic peritoneum below and to coils of intestine above. There is the probability of this hæmorrhage going on for a long time; when it has finally ceased a large mass of clot is left in the peritoneal cavity; its absorption will be both slow and incomplete. There is considerable risk that it will be infected from the bowel, leading to abscess formation, and there is a certainty that in the most favourable event the pelvic contents will be glued together by dense adhesions. To avoid these dangers and inconveniences the hæmatocele should be dealt with surgically either by way of the abdomen or vagina, the clots turned out, and any bleeding-point secured.

The ovum infiltrated with blood may remain in the tube (tubal mole) and the hæmorrhage may cease. This may be regarded as a favourable result, but he would be a bold man who would take on himself to say that a pregnant tube, even after the death of the ovum and in the absence of signs of active hæmorrhage, had lost its capacity for mischief. There still remains the possibility of further hæmorrhage or of sepsis, and the wisest plan is to remove the tube.

3. *Extratubal Rupture.*—In these cases the ovisac ruptures through the wall of the tube into the peritoneal cavity. The accident is attended with sudden shock, pain and collapse, and usually with the signs of internal hæmorrhage, so severe as to threaten the life of the patient. Immediate operation is indicated to secure the bleeding vessel and to save the patient. While a surgeon is being procured the practitioner should direct his efforts to the furtherance of the preliminary preparations for an operation. An attempt should be made to rally the patient by submammary injection of normal saline solution; $\frac{1}{2}$ gr. of morphia may be administered hypodermically, and the foot of the bed should be raised so as to maintain the circulation in the head and upper part of the body. It is best to avoid internal stimulants for fear of increasing the hæmorrhage.

4. *Rupture of the Ovisac without Death of the Fœtus.*—In rare cases after the rupture of the ovisac the placenta retains its attachment to the wall of the tube sufficiently to maintain the nutrition of the fœtus, which may go on to develop for the customary period, lying loose in the abdominal cavity or enveloped in false membranes. The placenta continues to grow and spreads over the pelvic organs and peritoneum, possibly gaining attachment to the intestines. At term spurious labour sets in, of course without result, the fœtus dies, and the placenta

shrivels up. The dead foetus may become mummified or calcified or may become the centre of a suppurating mass with the liquefaction of its soft parts and the gradual extrusion of its bones through fistulae leading to the skin or into internal organs. Such a case, if seen in the earlier months, should be operated on at once for fear of separation of the placenta and hæmorrhage. If seen in the later months, it is probably wiser to defer operation until a week or two after spurious labour has set in, so as to allow of the placental sinuses becoming thrombosed and so obviate the risk of serious hæmorrhage following the removal of the placenta.

FACIAL PARALYSIS—see under *Paralysis, Peripheral*.

FACIAL SPASM.

Painless spasm of the facial muscles arises from some reflex irritation of the facial nerve on one side, and when recent will disappear on the removal of the exciting cause, as in the form caused by dental caries or nose trouble. The severe type of Blepharospasm which involves the orbicularis palpebrarum usually disappears if the eye trouble causing the photophobia be treated promptly. All cases when chronic may, however, remain rebellious to treatment even when the exciting cause has been removed.

Sedatives, like Bromides, Indian Hemp, Morphia, Hyoscine, &c., may afford some temporary relief, but their continuous administration is obviously fraught with danger owing to habit formation. Blistering over the mastoid may diminish or stop the spasm for a time, Electricity in every form is usually futile, but galvanism sometimes has afforded benefit in mild cases. Mayer recommends resection of the supraorbital nerve when this is sensitive, and when pressure over it inhibits the spasm.

Stretching of the facial nerve sometimes is curative, but as a rule the tonic spasm returns when the resulting facial paralysis passes off. Noceti and others have succeeded in curing the condition by paralyzing the nerve temporarily with an injection of 1 c.c. of a 1 per cent. Cocaine solution in 80 per cent. Alcohol introduced into the nerve trunk at the stylo-mastoid foramen. The injection may require repetition after two or three days interval. The severe spasm accompanying trigeminal neuralgia (tic douloureux) can only be relieved by medical and surgical measures directed to the cure of the abnormal condition of the fifth nerve.

Facial tic or habit-spasm is a psychomotor phenomenon usually involving several groups of muscles on both sides of the face, as in the grimaces of neurotic children. Its treatment will consist in moral and educational methods by which the self-control of the patient is strengthened and the involved muscles kept in a healthy tone by massage and slowly regulated movements carried out in front of a mirror several times daily.

FAVUS.

The treatment of this inveterate parasitic skin disease when it invades the scalp has been revolutionised by the use of the X rays. These, when applied daily by an experienced operator, cause shedding of all the hairs of the head in a few weeks. (Even this result may prove to be unnecessary if Persson's method of treatment proves effectual. He made a culture from the spores, and inoculated half a million of the segments of the fungus daily, increasing the dose till ten times this amount was injected twice daily by the end of five weeks. After 77 injections a very chronic case of the disease attacking the body was cured.)

When complete epilation of the scalp has been effected an antiseptic ointment should be well rubbed in to destroy any of the spores which may be left in the empty hair follicles. Any germ destroyer may be used of which the physician has gained experience in the treatment of ringworm: Iodide of Sulphur Ointment (B.P.) will be found the most reliable. Chrysarobin, Resorcin (Ihle's Paste), White Precipitate, Copper Oleate, Iodised Phenol, and Salicylic Acid, all of the strength of 20 grs. to 1 oz., are efficacious, and strong Sulphur Ointment may be used.

Where only small patches are present or when the X-ray treatment is not available, the crusts should be removed by keeping the scalp soaked in spirit or boracic lotion under oiled silk, or by constant swabbing with oil or petroleum, or by poulticing. After the removal of the crusts the hairs should be industriously epilated by forceps, a definite area being attacked each day, and any of the above ointments rubbed well into the empty follicles. Some dermatologists employ blistering as in tinea to obtain epilation and disinfection. Lotions consisting of Perchloride of Mercury (1 in 250), Sulphurous Acid (1 in 4), Thymol or Menthol (10 per cent. in Alcohol) are preferred by some. Favus on the naked skin is easily removed by the above measures.

Baldness may be permanent in neglected cases, but the normal growth of hair may be calculated upon when the X rays have been skilfully applied so as not to cause severe dermatitis or burns. As the disease is conveyed to the human being from the cat re-infection should be guarded against by the destruction of any affected animal.

FEVER.

The treatment of the fever state and of hyperpyrexia will be mentioned under the headings of the different fevers, as Typhus, Typhoid, Rheumatism, Measles, Scarlatina, &c.

FILARIASIS—see under Chyluria and Elephantiasis.

FISSURE—see under Anus, Fissure of.

FISTULA—see under Anus, Fistula of.

FLAT FOOT.

Preventive treatment in the most common or static type of this deformity is of great importance, and when the affection is detected in its initial stage it may be arrested or removed by rest or a change of occupation which will not entail prolonged standing or weight carrying. The patient should be trained to stand and walk with the inner line of the feet kept parallel, the toes not being splayed outwards but looking directly forwards. Laced boots should be worn which do not cause the great toe to be turned outwards, and he should patiently practise standing and walking on tip-toe; this will strengthen the calf muscles, and may be advantageously supplemented by massage and douching, and with exercises such as walking on the outer border of the naked feet and circumduction movements at the ankle joint.

When the deformity is met with in the next degree of severity a metal plate should be inserted inside the boot which, whilst supporting the inner arch, tends to throw the weight of the body on the outer border of the foot. Berry has devised an ingenious leathern ankle support for night wear, in which the foot may be tightly laced up and kept in the flexed and adducted position. When the patient is found to be unable to stand on tip-toe the shortened ligaments must be stretched and adhesions forcibly wrenched asunder by the hands of the surgeon under anæsthesia, and the foot being held in the inverted position and flexed at the ankle it is put up in a plaster casing or in Dupuytren's splint. When this procedure fails after one or more repetitions a piece should be excised from the tendons of the peroneus brevis and longus, and the tendo Achillis may be cut subcutaneously. Some surgeons advocate tendon transplantation or the removal of a wedge-shaped piece of bone, including the articular surfaces of the scaphoid and astragalus, or a section being made obliquely through the os calcis the posterior portion of this bone is displaced forwards and downwards in order to constitute a new arch. These operations, however, are often unsatisfactory in their results.

Metatarsalgia, or Morton's Disease, is often associated with flat foot, but even when evidence of this is wanting much relief to the excruciating neuralgic pain felt over the third and fourth metatarsal bones may be obtained by the measures suitable for the treatment of the early stage of flat foot. The boots should be large, and should be so made that the front part of the sole under the toes lies perfectly flat in contact with the ground as the patient assumes the standing posture. The skin should be kept dry by powdering the socks with Boric Acid. A metal plate, or celluloid inset, should be moulded from a plaster cast of the foot and inserted inside the boot resting on the sole. Rarely will bone operations be requisite, but the head of the third or fourth metatarsal should be excised if out of its normal position.

FLATULENCE—see under *Dyspepsia*.

FRACTURES.

Only the general principles of treatment need be detailed. These consist in the reduction of the deformity by placing the fragments of bone in their normal position, the application of such simple mechanical contrivances as will maintain their apposition till union occurs, and when necessary the use of appliances to keep up such extension as will overcome spasm of the muscles tending to cause over-riding of the broken bones, and at the same time to employ such local measures as will keep the joints and muscles in their normal healthy state.

When a case of fracture comes under the care of the surgeon, no time should be lost in carrying out these principles. As in the case of dislocations, the great barrier to reduction is the reflex contraction of the muscles, and the sooner the attempt at restoration of the broken fragments to their normal position, the easier will the operation become. The popular idea of the importance of "setting" a fracture as soon as possible after its occurrence is therefore based upon sound pathology, and the surgeon is liable to blame if he delays the reduction till an ideal form of splint or apparatus is at hand; it is thus wise to extemporise splints till more suitable appliances can be obtained.

The patient's clothing should be carefully removed by slitting up the seams in order to cause as little movement as possible of the broken fragments, otherwise a sharp spicula of bone may cause much injury of the soft tissues or even be made to perforate the skin, changing a simple into a dangerous compound fracture. He should be placed upon a firm hair mattress, and the most gentle and thorough examination of the injured limb should be carried out, after which the surgeon, when his appliances are at hand, proceeds to reduce the deformity. This should in all cases be achieved without the use of force, by so arranging the position of the limb as to cause the most complete relaxation of all its muscles and joints in order that the fragments may be brought into accurate apposition without rough pulling or hauling, which only excites reflex spasm and thwarts his efforts at reduction.

This is achieved by an assistant grasping the limb firmly above the seat of fracture, whilst the surgeon makes very gentle steady traction in the line of the axis of the limb upon the lower part, during which the bones come into apposition, guided by the gentlest pressure of the fingers when necessary. Care must be taken that no muscle, fascia or tendon is left interposed between the divided ends, and if any great difficulty be experienced from muscular spasm an anæsthetic should be administered.

Accurate adjustment of the bones having been secured, a well-padded splint of wood, gutta-percha, leather, poroplastic felt, wire gauze, perforated tin or zinc is applied on each aspect of the limb. These splints should be so shaped, moulded, or lined with padding as to apply when bandaged an even pressure over the limb. As they are adjusted to the fractured member the

gentle extension or traction is to be kept up until the whole is enveloped in a good calico bandage. The use of a few straps and buckles to secure the splints in position before the application of the bandage is a great convenience. Buckles should always rest upon the splints, and not upon the skin. Much skill and experience is required in graduating the pressure of the bandage, which should not be tight, and the seat of fracture should be left free and exposed when possible.

Before completing the bandaging the limb should be carefully measured and contrasted with its fellow in order to demonstrate that full reduction has been accomplished, and it is a good rule in all cases to obtain a skiagram after the setting operation has been completed.

The limb should be maintained in the position which affords the most complete relaxation of the muscles. The less it is interfered with the better, though careful inspection is to be constantly maintained, lest the bandages may get tight from subsequent swelling, as gangrene might thereby result. The surgeon satisfies himself from time to time by passing his finger over the seat of fracture that the fragments are kept in position, and by passing his eye over the entire limb, and contrasting it with its fellow on the sound side, he sees that no rotation or deformity arises.

Absorbent cotton-wool affords the most tempting padding ; it should, however, be sparingly used. The writer, when in charge of the fracture cases in his house-surgeon days, discarded it entirely, owing to its liability to become lumpy and uneven, and used instead a padding of strips of good old flannel, which best answers every purpose.

Some surgeons discard all wooden and metallic splints in the treatment of most simple fractures of the leg, and at once employ an immovable plaster of Paris casing for the entire limb, made by applying over cotton-wool wetted bandages previously impregnated with the dry powder. By carrying the casing above the knee the patient may be permitted to walk about in a few days ; this " ambulatory " method of treatment is one, however, which the inexperienced surgeon should be slow to follow. The objections to the plaster of Paris treatment are that it prevents inspection of the seat of fracture, and offers a barrier to massage and early passive movements ; these difficulties may be overcome by sawing the bandage through vertically so that the casing may be easily removed and reapplied with the aid of buckles or bandages. Starch, Glue, Gum and Chalk are used in a similar manner. The best use that these immovable casings can be put to is to employ them at a later stage to replace the ordinary splints after union has been well started between the broken fragments.

It will often be necessary to apply other splints in addition to those adjusted round the broken bone with a view of securing complete rest to the joints above and below the fracture, when

their movement tends to disturb the position of the fragments. Extension and counter-extension may be required in special cases. Space will not permit of any enumeration of the various special appliances which are used in the treatment of different fractures. Those of them of any use fulfil their purpose only in as far as they carry out the simple indication of insuring rest and accurate approximation of the fragments of the broken bone, while nature makes good their repair.

Of late years considerable advance has been made in the more radical fixation of the fragments by cutting down upon the site of injury and suturing them together with silver wire, or securing immovable apposition by the insertion of steel screws, staples with perforated metal plates, ivory pegs or steel pins. These methods are invaluable in many cases where time is of overwhelming importance, as they can enable the patient often with safety to attend to important duties which cannot be postponed. They are suitable in all cases of transverse fracture of the patella, of the scapular neck, lower jaw and olecranon, os calcis and fractures of the humerus near the shoulder joint, and to some forms of fracture at the hip joint in young subjects.

(These methods are now accepted as the best treatment for ununited fractures occurring in healthy subjects ; in old patients and in cases of fracture due to a previously diseased state of the bones a permanent mechanical appliance affords the best means of meeting most difficulties.)

In the treatment of simple fractures a subject of vital importance is the duration of the time during which immobility is to be strictly maintained. A quarter of a century ago L. Championnière pointed out that immobility was not necessary, and that more callus was thrown out if the fragments were not kept rigidly fixed in apposition by immovable splints. In the first edition of the present work written 20 years ago the writer stated : "As a rule it may be said that the mistake is sure to be made of keeping the entire limb in a state of absolute rest long after the necessity for such has passed away, to the great retardation of recovery. In most cases gentle massage, or kneading and cautious passive movements, may be commenced after the middle or end of the third week, the splints being again applied. This effectually prevents the formation of adhesions, and greatly increases the vitality of the tissues, and minimises subsequent pain and stiffness." These views were considered by many authorities at that date as heterodox, notwithstanding the doctrine of L. Championnière, but the exhaustive researches of Mr. W. H. Bennett and others have since demonstrated their truth, and *early* massage is accepted by all authorities as an important if not essential routine in the treatment of fracture. But the pendulum in the opinion of the writer has swung too far in the direction opposite to the old malpractice, and massage and joint movements are carried out on the first or second and subsequent

days of the fracture. When there is much œdema and effusion, massage certainly should be commenced at once.

The best routine will be to delay massage to near the end of the first week even when the fracture is in the vicinity of a joint, in which case it is most clearly indicated. After a few days of gentle stroking and kneading of the muscles cautious passive movements and then voluntary movements of the neighbouring joint may be permitted daily and the splints reapplied. The plan of discarding these altogether from the first as advocated by L. Championnière after setting the fracture is always open to the serious danger of accidental displacement during changes of posture and whilst the patient is asleep. Massage and gentle movements in order to remove swelling and pain, to prevent adhesions and to keep up the nutrition of the muscles must not be confounded with massage undertaken to cause some movement between the fragments in order to increase the production of callus, which must still be considered a doubtful practice.

The first step in the treatment of *compound* fractures is to insure thorough sterilisation of the wound in the skin and soft parts by flushing with an unirritating antiseptic as warm Boric Acid solution, after which all torn or lacerated tags of soft tissue and loose particles of bone should be removed. The fragments being brought into accurate apposition they are to be maintained in this position by suitable splints and the wound treated on approved surgical principles; as a rule primary skin union is not to be expected, and suitable drainage provision is usually necessary. In severe injury of a limb with an extensive destruction of the soft tissues and bloodvessels, and much comminution of the bone, especially with contamination from without by foreign matter, the only resource left to the surgeon will be amputation.

Fracture of the Clavicle is dealt with under its own heading.

FRECKLES—see Chloasma.

FRIEDREICH'S DISEASE.

Noknown drug possesses any influence over this malady. Arsenic, Gold Salts, Silver, and many remedies recommended in Ataxia have no beneficial effect whatever. Much may be done by training the patient according to the educational methods of Fraenkel, to relearn through constant practice the performance of the co-ordinated movements which the progress of the disease has abolished.

FROST-BITE.

The frozen part may in most instances be brought to its normal condition, even if white, hard and insensible, by the heat of the patient's own blood when brisk friction is employed to restore the local circulation.

Artificial heat should never be employed as it may be followed by too rapid reaction, congestion, inflammation or gangrene being liable to supervene. The gradual restoration which follows vigorous

friction with dry snow is the most satisfactory termination. The part should be afterwards enveloped in dry wool, flannel or furs.

Where death or gangrene of the part has already occurred, the surgeon will probably find amputation necessary. As a rule, it will be advisable to use antiseptics freely and to wait for a well-marked line of demarcation if there be but a small bulk of the tissue destroyed. Where the gangrene affects a very superficial film of tissue, Perchloride of Mercury (1 in 2,000) or Permanganate of Potassium (1 in 400) may be freely used. Hermance uses Ichthyol in the slight cases, and where the parts become raw he finds the best application to be Acetanilid Ointment, but the raw surface may be treated by any mild astringent and antiseptic ointment as Ungt. Acid. Borici.

FURUNCULUS—see Boils.

GALL-BLADDER AND BILE-DUCTS, Inflammation of.

The treatment of *simple acute catarrh of the gall-bladder* will depend upon the exciting cause, and as this is generally due to the presence of agents which produce catarrhal inflammation of the common duct extending in the first instance from the stomach and duodenum to the duct and finally invading the cystic and bladder membrane, the remedial measures indicated in simple catarrhal jaundice should be employed. When the cholecystitis is due to gall-stones the agents to be used will be found detailed in the next article.

Chronic catarrhal cholecystitis may also be the result of gall-stones, but more frequently it is due to causes which interfere with the periodical evacuation of the gall-bladder as the pressure of scybala in the right bend of the colon, tight lacing and ptosis of the liver—a part of the condition present in Glénard's Disease. Rest in bed with the view of effecting replacement of the displaced organs, followed by free purgation, will meet the requirements of most cases. Drainage of the gall-bladder is generally undertaken only in the next type of the disease, but cure of a simple chronic catarrhal state of the gall-bladder may be confidently expected to follow the removal of concretions; drainage has proved effectual when an operation was undertaken to remove gall-stones and these were found absent.

Suppurative or infectious cholecystitis, whether or not due to gall-stones, is the result of *Bacillus coli* or other infective agent which has gained entrance into the gall-bladder. The treatment of this form and of its most virulent *gangrenous* type must be prompt if life is to be saved. The abdomen should be opened without delay, the gall-bladder freely incised, its purulent contents evacuated and free drainage provided. In the gangrenous or acute phlegmonous variety of the disease the gall-bladder itself must be completely removed.

Catarrh of the Bile-Ducts (Cholangitis).—The term *Acute catarrh* of the common bile-duct is synonymous with *catarrhal jaundice*. As this condition is nearly always the result of a

gastric or duodenal catarrh which extends up to the entrance of the common duct its treatment is that of the primary affection. The error in diet which has caused the gastric catarrh having probably been corrected before the jaundice appears, there is little use in administering emetics which would only do harm by increasing the gastro-duodenal inflammation. If vomiting is present, it may be encouraged, however, by directing the patient to drink large quantities of tepid water till the stomach has been thoroughly washed out. One dose of Calomel (3 grs.) may then be given followed by a smart saline purge (ʒss. Glauber's Salt). As the absence of bile in the intestine tends to cause constipation the saline will require repetition every second morning. The best routine treatment for the gastro-duodenal catarrh is to allay the nausea by a simple effervescing mixture of 40 grs. Bicarbonate of Potassium given in effervescence with Lemon-juice, after which the following gastric sedative should be administered :

R. *Bismuth. Carb.* ʒiij.
 Sodii Bicarb. ʒiij.
 Sodii Salicyl. ʒij.
 Mucil. Acaciæ Rec. ʒiss.
 Aquæ Chlf. ad ʒviiij. *Misce.*

Fiat Mist. Cpt. ʒss. ter in die p.p.a.

Pain if present over the hepatic region may be relieved by a large poultice or by the application of a warm liver pack covered up by mackintosh tissue or oiled silk. The diet should consist of milk with the addition of a little lime or Kali water, and at a later stage soups free from fatty matter may be freely given. The above treatment is equally efficacious in those cases arising from inflammation about the head of the pancreas.

Chronic Catarrhal Cholangitis is, practically always, the result of the irritation of gall-stones, and its general treatment will be discussed in the next article. When the obstruction of the common duct is incomplete there is often added the condition known as *Charcot's hepatic intermittent fever*, owing to the admission of *Bacillus coli* or other infective organisms within the biliary passages. The treatment of the rigors and sweating resolves itself into the alleviation of the symptoms as in other infections by full doses of Quinine or Salicylates and warm alcoholic drinks, &c., whilst hepatic pain is to be relieved by the liver pack and saline purgatives. The surgical removal of the biliary concretion or obstructive factor should be undertaken at the earliest stage possible in order to prevent suppurative cholangitis, cholecystitis and liver abscess, which when once established are liable to prove fatal. Where operative measures fail or are contra-indicated Vaccine treatment by injections of sterilised *Bacillus coli* should be carried out.

GALL-STONES (Cholelithiasis).

This is an affection in which *preventive* treatment is a practical consideration, since many individuals are to be met with who are known to have passed gall-stones with the fæces, and preventive measures are as clearly indicated in those who have had operations performed for the removal of these calculi in order to prevent their return. The causes which tend to the production of gall-stones must be realised ; some of these are removable; others, though permanent, may nevertheless be minimised. The most potent factor is, however, one over which the physician has little control—*i.e.*, infection of the gall-bladder and biliary passages by the typhoid bacillus and *Bacillus coli* and possibly by other organisms. The next most important cause is stagnation of the bile, as this is sometimes due to displacements of the liver by tight lacing or to ptosis of the organ in Glénard's disease—conditions which must be met by judiciously selected corsets, mechanical supports or abdominal belts. As stagnation of the bile is also encouraged by sedentary habits, free muscular exercise, gymnastics, swimming exercises, especially in fresh water, open-air life and outdoor active occupations are essential. In the obese and those who for other reasons are prevented from such exercises, the only resource will be found in thorough abdominal massage preceded by bathing, douching or other hydropathic measures. This treatment should be prescribed for all so-called "bilious" subjects, in whom there is often an undoubted family predisposition to the formation of biliary concretions.

Not only should constipation be avoided, but free saline purgation should be effected once or twice a week in order to keep the intestinal tract in as healthy a state as possible and to insure a complete evacuation of the contents of the gall-bladder. For this latter purpose an occasional full dose of Calomel or Blue Pill every week or ten days is a useful adjuvant to treatment. Intestinal antiseptics are clearly indicated, but as the action of all such drugs hitherto used for the purpose of disinfecting the alimentary canal is very unsatisfactory little advantage can be expected from their routine administration. Continuous small doses of calomel are obviously out of court in a condition so thoroughly chronic as the one under consideration. An occasional course of Urotropin is believed by some enthusiasts to retard the growth of organisms in the biliary passages, but as the drug is so rapidly eliminated in the urine it is doubtful that it can effect any such result in the gall-bladder.

Salicylates are believed to act upon the bile and render it more fluid ; the same remark applies to Benzoate of Soda, Soaps made from soda and oleic acid and to Bile Salts, and these agents are therefore also indicated when there is reason to believe that calculi have already formed.

Diet is of great importance, but as in most other diseases a fanciful restricted regimen based upon chemical theories does more

harm than good. The diet should be as varied as possible, over-eating being forbidden, but as much meat (especially white meat) as is necessary for the support of the body may be permitted; highly spiced or rich seasoned dishes should be avoided. Animal fats and carbohydrates should be limited and greasy cooking should give way to plain boiling and roasting. Alcohol in every form is injurious. It is a well-recognised fact that the greatest tendency towards cholelithiasis is often met with in spare eaters. This is probably due to the small amount of fluid which such individuals imbibe and the obstinate constipation which is thereby engendered.

An abundant supply of fluid is undoubtedly the most important ingredient in the diet in every case, but the increase of fluid should not consist of milk, as this article had better be indulged in to a moderate extent only, unless skimmed milk or buttermilk be substituted for it. Effervescing Kali, Soda, Seltzer or Apollinaris water may be freely taken between meals and in moderate amounts at meal-times. Tea made by the Russian method with lemon and a little sugar without cream, only the China leaf being employed, is the best routine diluent, and since so little of the China leaf is necessary it may be freely partaken of at all times and it may be taken in the early morning instead of the usual mawkish draught of warm water on rising. The writer strongly advises all patients suffering from a tendency to gall-stones to avoid meals in bed when possible.

Olive Oil as an article of diet is invaluable, and it is a good rule when possible to make this fat take the place of butter, cream and the fat of meat. It may be freely used with salads and as a substitute for butter in various cooking operations.

Hepatic Colic.—Often the first intimation of the presence of a gall-stone is afforded by the pain occasioned by its attempt to pass down the common or through the cystic duct. The first indication is the relief of pain; when this is agonising and unbearable a hypodermic injection of Morphia ($\frac{1}{4}$ to $\frac{1}{2}$ gr.) must be given at once and it is advisable to always combine with it 1 min. Liquor Atropiæ. This latter drug does not prevent the pain-relieving action of the narcotic, but it probably neutralises the paralysis of the muscular fibres of the duct which follows when morphia is given alone. Hence this latter consideration should tempt the physician to withhold morphia when the pain is bearable on the chance of the stone being delivered into the duodenum. Chloroform affords complete relief, and during the absolute degree of relaxation following general anæsthesia the stone may slip through the orifice of Vater. In mild attacks a large hot poultice or hot pack or stupe may be applied over the liver, but these measures are inferior to a bath in water as hot as the patient can tolerate—105° to 110° F.—and in this under the surveillance of the physician he may be safely kept till signs of muscular prostration begin to show themselves, and during the subsequent relaxation of the tissues of the duct the stone may slip through.

Relief is often afforded by copious draughts of as hot water as can be borne by the mouth, and when vomiting is present this treatment can be continued with the hope that if the stone be already near the orifice of the duct its expulsion may be facilitated by the mechanical pressure of the abdominal muscles and diaphragm as the spasm diminishes. The physician should always keep in mind that the entire phenomenon of hepatic colic is nature's method of expelling a foreign body, and though the relief of severe pain may be imperative it is not the best practice to, immediately upon the approach of suffering, fly to profound narcotics when these can be avoided.

The efficacy of the hot water is increased by the addition of a little Bicarbonate of Soda, and Yeo combines 20 grs. Salicylate of Soda with 60 grs. bicarbonate in each pint of the hot solution to be swallowed in mouthfuls during the paroxysm.

Emetics sometimes give relief probably by their power of allaying spasm, and some patients in subsequent attacks discover this method for themselves and resort to lukewarm water draughts to effect emesis upon the approach of an attack. It is inadvisable to administer irritating substances like zinc sulphate, tartar emetic and mustard, as these are liable to induce swelling of the mucosa about the entrance of the duct; if the physician decides to produce emesis after tepid water has failed a hypodermic of Apomorphia is the best procedure.

Robson has found that 1 gr. Exalgin dissolved in a teaspoonful of hot water and repeated every half-hour for three or four times often relieves the paroxysm. Antipyrine, Antifebrin, and other new analgesics may be tried, and Opium, Morphine, Ether or Chloroform in small doses may be given by the mouth, or a Morphia Suppository may be employed when for any reason the hypodermic route is contra-indicated.

The following combination of pain-relievers may be left in the hands of an intelligent patient for the treatment of expected attacks till the arrival of the physician :

R. *Liquor. Morphiæ Hyd.* ʒiv.
 Tinct. Cannab. Ind. ʒij.
 Olei. Menthæ Pip. ʒij.
 Spt. Æther. Sulph. ʒiv.
 Spt. Chloroformi ʒvj.
 Spt. Æther. Nit. ad ʒiiij. *Misce.*

Ft. Mist. Signa.—"A teaspoonful with a tablespoonful of whiskey to be taken in a wineglassful of water when the pain comes on. To be repeated in 30 minutes if the pain continues and every 2 hours afterwards till relief is obtained."

Olive Oil.—This drug, as will be mentioned later on, is employed as an agent to assist in the disintegration of gall-stones, but it is moreover recommended strongly as the best routine treatment for the relief of the severe pain during an acute attack of hepatic colic when given in doses of 5 or 6 oz. Some observers state that they never saw the oil vomited (the opposite has been the writer's experience). It may be given with a tablespoonful of whiskey or brandy, and 5 drops of Oil of Peppermint. It is claimed for it that it very often causes the rapid expulsion of the calculi, and greatly increases the flow of bile, and sometimes instantly relieves the pain. Blum injects 15 oz. of the warm oil into the rectum.

The pain having subsided, and no evidence being forthcoming of the stone having been passed by the bowel, the question crops up of the wisdom of administering drugs with the view of aiding its expulsion or effecting its disintegration. In common duct obstruction the physician can be usually certain of the lodgment of the stone when deep jaundice supervenes, but he should remember that this does not follow cystic duct blocking, which, however, usually shows itself by considerable enlargement of the gall-bladder.

Of the drugs believed to have a specific or solvent action on the stone Salicylates occupy a prominent place; 20-gr. doses of the sodium salt three or four times a day render the bile more fluid, and are consequently administered as a routine to aid in its solution.

Benzoate of Soda appears to possess similar action, and Glycerin was formerly much used.

Olive Oil is largely administered for this purpose; 4 to 8 oz. or even more may be given once or twice a day. Obviously it does not enter the ducts till after digestion, when a portion of it is converted into a soap or fatty acid, this is believed to cause disintegration of the cholesterin mass composing the calculus. The number of cases in which this treatment has succeeded in the hands of many physicians warrants a trial of the drug in all instances before resorting to operation. It should be given when fasting. Oleic Acid and Soaps made from it are also administered, and salts of the Bile Acids are sometimes given (5 grs. Sodii Taurochol.) in Keratin-coated pills, or Ovogal with great advantage. Turpentine and Ether (Durande's cure) are also vaunted, but there is little evidence of their value.

Chologen, which is believed to be a mixture of Calomel and Podophyllin, in tablet form is greatly used on the Continent, and is much praised by Elsbergen.

Alkalies are believed to exercise some solvent action, and there can be no doubt of the efficacy of the Carlsbad and Vichy Waters when freely administered at the spas, and a resort to Carlsbad in chronic cases is a routine recommendation with many physicians when the fatigue of the long journey and the expense are not serious considerations.

Of a different class are the drugs and agents sometimes employed with the view of exciting peristaltic action in the common and cystic ducts. Thus a large dose of Calomel (10 to 15 grs.) followed by 1 oz. Castor Oil is occasionally efficacious in expelling the contents of the gall-bladder, and many instances are on record where numerous calculi large and small have been cleared out by this method. It is not, however, a safe practice to follow where a large stone has recently lodged in the common duct and caused deep jaundice. Its best results are seen in chronic cholelithiasis, where the gall-bladder contains calculi which are not actively blocking the cystic duct, and the writer has several times seen operative procedure rendered unnecessary in cases where this had been already decided upon owing to the success of one calomel and castor oil dose.

Harley recommended that attempts should be made to forcibly expel calculi by pressure upon the abdominal muscles, and the massage movements known as "pumping the liver" were advocated with the same intention; both of these plans should be discountenanced owing to the danger of causing rupture of the walls of the duct. Electricity in the form of the Faradic current with one pole over the gall-bladder and the other on the spine has been recommended with the view of exciting strong peristaltic action in the gall-bladder and ducts, and it is not open to the serious objections which maintain against massage and other manipulative methods.

Surgical Treatment.—This is being of late years resorted to with increasing frequency and success. Operative interference is considered justifiable under the following conditions: (1) In gall-stones impacted in the common duct associated with persistent jaundice and repeated attacks of pain. (The period during which medicinal remedies are to be persevered with must be decided upon by the severity of the general symptoms and the condition of the patient, but it is safe to say that the mistake is still frequently made of delaying too long before operating.) (2) When attacks of hepatic colic with or without jaundice occur repeatedly. (3) When the gall-bladder is markedly enlarged without jaundice. (4) When the gall-bladder is enlarged and jaundice is present, if cancer is probably not the cause. (5) In all suppurative conditions of the gall-bladder. (6) In all cases where infective cholangitis is present. (7) In cases where biliary fistulæ have formed.

The nature of the operation required will depend upon the physical conditions discovered when the abdomen is opened. Thus, if the stone be found blocking the common duct high up, the operation of *Choledochotomy* or *Choledocholithotomy* is performed. This consists in incising the duct over the calculus as the latter is grasped between the finger and thumb, and after its extraction the duct being explored for the presence of other stones the wound in the wall of the biliary passage is to be either carefully sutured or drainage provided by the introduction of a rubber

tube. When the stone is found firmly impacted in the ampulla of Vater the operation of *Duodeno-choledochotomy* should be performed. This consists in opening the duodenum by a vertical incision, and after enlarging the orifice of entrance of the duct the stone is delivered through the opening. In all cases of stone in the common duct not only should this be carefully explored, but the gall-bladder must be examined and any calculi found in it must be removed at the same time. Formerly in some cases the operation of *Cholelithotrixy* has been successfully performed without incising the duct, the stone having been crushed by padded forceps or broken up by inserting a needle—an operation not to be recommended.

The operation for stones located in the gall-bladder is comparatively easy in the absence of adhesions and acute inflammation. *Cholecystotomy* is performed by making a vertical incision 2 to 2½ inches long external to the border of the right rectus muscle, commencing 1 to 2 inches below the costal arch. This is the usual situation of the tumour if present. The point of the tenth rib is a good guide in the absence of swelling. Having felt the gall-bladder by the finger thrust into the wound (after ligation of all bleeding-points), its contents are evacuated by a free incision made in the fundus, and the calculi removed by a scoop after the peritoneal cavity has been carefully isolated by gauze packing. The margins of the wound in the bladder walls are invaginated and secured by a purse-string suture around a long piece of stout rubber tubing whose extremity is left projecting from the skin wound.

After all discharge has ceased, the tube may be removed and the fistulous opening left to close spontaneously. The tube can usually be removed after about 8 or 10 days. This operation is indicated in all cases of empyema of the gall-bladder, whether due to calculi or not, but where the cystic duct is found impervious the gall-bladder should be removed as presently to be described.

Cholecystendysis is indicated in a small percentage of cases where the gall-bladder is quite healthy and its contents free from pus. It consists in the removal of a small calculus through a limited incision in the walls of the gall-bladder, which are then closed by a double row of sutures and the organ returned within the abdominal cavity, the skin wound being closed afterwards without providing drainage. The operation of incising the gall-bladder and suturing it with or without drainage has, in the hands of Kehr, a mortality of only 2 per cent., and the statistics of Mayo give only a death-rate of 1·47 per cent.

When acute cholecystitis is found to be present and the walls of the gall-bladder are in a sloughing or gangrenous condition, or where these complications are absent and the walls of the gall-bladder are found to be greatly thickened by chronic fibroid changes, or where the cystic duct is strictured or contains a

firmly implanted calculus, the operation of removal of the gall-bladder—*Cholecystectomy*—must be performed. This is effected by separating the organ from the lower surface of the liver, ligaturing the cystic duct and all bleeding vessels, after which the gall-bladder is taken away and the stump of the cystic duct cauterised or its mucous membrane dissected out. The operation should be carried out whenever any growth is discovered in the walls of the gall-bladder, whether calculi be present or not. It is distinctly contra-indicated if the common bile-duct is obliterated.

The operation of *Cholecystenterostomy* is indicated where there is a permanent stricture of the common duct or where this is obstructed by inflammatory or cirrhotic changes in the head of the pancreas, or by cancer in this latter situation or in the duct itself. It consists in short circuiting or establishing a direct communication between the gall-bladder and duodenum or jejunum. When it is possible to effect a junction between the upper dilated portion of the constricted duct and the bowel the operation known as *Choledochenterostomy* may be admissible. These operations are also indicated for the relief of permanent biliary fistulæ which open on the surface of the body and cause the discharge of large quantities of bile.

When external fistulæ are the result of gall-stones left *in situ* which could not be removed at the time of operation these may sometimes be dissolved by the injection of Oil of Turpentine through a rubber tube passed along the duct to the impacted stone.

GANGLION.

These small tumours appear oftenest on the back of the wrist, and, when seen early, are in most cases easily dealt with by flexing the wrist so as to make them tense and prominent, when with the firm pressure of the surgeon's thumbs the cyst wall is ruptured and the jelly-like contents squeezed into the surrounding tissues. A smart blow with a smooth hard object effects the same result. When the ganglion resists such pressure a penny-piece wrapped up in two or three layers of lint may be tightly bandaged over it for several hours, the local circulation being carefully watched in the meantime, or milder pressure may be applied over strong Iodine applications. Failing this, a tenotomy knife may be inserted under the scrupulously sterilised skin, making a valvular incision and dividing the wall of the cyst on its lateral aspect. Mere puncture of the ganglion with the point of the knife, as usually recommended, is often useless, as the fluid speedily gathers again. After the incision pressure should be applied.

Another plan is to pass a strand of carbolised thread or horse-hair through it under aseptic precautions, and permit it to remain for 5 or 6 days, after which the punctures are to be sealed up by a dry antiseptic dressing.

When, notwithstanding these measures, the fluid reappears, the only treatment is to excise completely the ganglion. This is the recognised routine method of dealing with the large compound ganglia which are always of tuberculous nature. In the dissection the whole of the diseased sheath must be taken away, and its prolongations followed up even in some instances to the opening up of the smaller joints. All melon-seed bodies with every portion of the walls of the sac must be removed. The space should then be freely dusted with Iodoform, and the wound closed with sutures under an antiseptic gauze dressing. The joints involved should be exercised passively and actively within a period of at most 10 days to prevent ankylosis and gluing of the tendons in their new sheaths. The plan of injecting Iodine or other irritant into simple or compound ganglia is not to be recommended.

GANGRENE.

On the first signs of threatening gangrene in a patient wearing tight bandages, splints, &c., the restrictions should be immediately removed, the limb slightly elevated and enveloped in warm, dry, antiseptic, absorbent wool. The same measures should be followed in the gangrene caused by Carbolic lotions.

When the senile form of gangrene is feared, much may be done to prevent the death of the toes or portions of the feet by keeping the lower extremities warm and the foot free from all pressure by tight boots. Thick woollen night-socks should be worn, and hot-water bottles avoided, any threatening symptoms being met by rest in bed with elevation of the limb and warm wool coverings.

When very local or circumscribed in extent and superficial in position, as in slight degrees of traumatic gangrene, the sloughs may be hastened in the separation process by the application of moist warmth as charcoal poultices or warm boric compresses. But the surgeon should aim in all cases of gangrene at asepsis when possible. A dry gangrene becomes rapidly changed into a moist one as soon as bacterial organisms are admitted; therefore, sterilisation of the skin by an antiseptic should be a routine precaution before elevating the part and enveloping it in a warm antiseptic absorbent wool under a light bandage pending the decision upon operative procedures.

As a rule, in gangrene of the senile type involving the feet or legs, as soon as the death of the part is obvious and the pulsation has disappeared in the posterior tibial artery at the ankle, amputation should be decided upon without delay. To wait for a well-marked line of demarcation is only to submit the patient to the dangers of an exhaustive septic inflammation. Amputation should therefore be resorted to immediately, the incisions being made high up and well above the dead area, and in all cases above the level of the knee-joint, the lower third of the thigh being now the recognised site for removal of the dead limb, because

the upper part of the posterior tibial artery or the lower portion of the popliteal is nearly always blocked.

In *diabetic* gangrene there is usually less urgency. The limb should be disinfected, dusted with Iodoform powder, and enveloped in dry wool, and if the gangrene shows no signs of spreading the toes may be removed and the stumps dressed after a line of well-marked demarcation has formed. If, however, pulsation has already disappeared in the posterior tibial, amputation above the knee should be resorted to without further delay. Diabetic dietary should follow up the operative procedure, but the diet should not be too restricted owing to the danger of coma. On account of this latter danger some surgeons prefer to operate under spinal anæsthesia. Opium is, however, not contra-indicated in the after-treatment or at the onset when pain is prominent.

Moist spreading gangrene is always due to the admission into the tissues of some septic organisms; these may be present when the skin wound is trivial or when severe trauma has injured the soft parts, with contamination from earth or dirt of any kind. As soon as the true septic or infective nature of the gangrene has become obvious, the only hope of saving life lies in immediate amputation performed high up, the incisions being carried through the healthy tissues, care being taken to prevent infection of the surgical wound by the secretions from the affected area. The allied condition known as Malignant Œdema will require the same prompt and radical treatment.

In *traumatic* gangrene without infection the condition is akin to that which sometimes follows the ligation of a main vessel, and operative procedure may usually be safely delayed till after the shock of the accident has passed away, so that the result of the natural attempt at restoration through the anastomosing vessels may be determined. Even here it will be unwise to wait too long owing to the danger of the dry type becoming changed into a moist spreading gangrene even when there is no skin wound. When there is extensive destruction of the tissues as in compound fracture caused by crushing machinery, &c., followed by rupture of vessels and great extravasation of blood, the injury being certain to end in the death of the limb, amputation should be performed as soon as the first serious elements of shock have passed away.

In the senile, diabetic and traumatic types of the disease, when both legs or arms are involved at the same time, there is little hope to be expected from operative or other measures, but one limb should be immediately amputated so as to permit the patient to recover from the shock of the operation, when after the interval of several days the second operation may be carried out, the gangrenous limb being in the meantime subjected to rigorous antiseptic treatment.

The treatment of gangrene of the Lung, of Raynaud's Disease, Cancrum Oris, Bedsores, Frost-Bite, &c., is described under the heading of each affection.

GASTRALGIA—see under Gastric Neuroses.

GASTRIC CANCER—see under Cancer.

GASTRIC DILATATION OR GASTRECTASIS.

Acute Dilatation of the Stomach is a very rare and generally fatal malady, the cause of which still remains a mystery. The treatment must in the state of our ignorance of its etiology and pathology be entirely symptomatic. If vomiting has not occurred the stomach becomes dangerously dilated, or this may even follow shortly after a copious emesis, and in either case the state of paralytic distension must be immediately relieved by passage of the rubber stomach-tube and lavage. Drugs by the mouth are useless; a full hypodermic dose of Morphia should be given with the view of soothing the nervous excitement and possibly of controlling the enormous secretory action of the gastric mucosa. The colon should be flushed out by a large quantity of normal saline solution, and as much of this should be left in the bowel as the patient is able to retain. Saline solution should be injected at several points into the loose subcutaneous tissue in order to overcome the dehydration of the blood caused by the profuse secretion from the stomach. It may be advisable to transfuse with the saline or to administer defibrinated blood by the veins. Collapse may be relieved by warmth to the surface of the body and sinapisms to the calves of the legs and pit of the stomach. Whiskey or brandy should be administered *per rectum*. The writer was fortunate in meeting a typical example of this formidable malady which yielded to the above treatment. After the attack has passed off, should the patient survive, the stomach should have complete rest for 48 hours, the rectum being utilised for feeding purposes; the first food permitted should be strong clear soup or peptonised milk in small quantities.

The acute paralytic distension and dilatation of the stomach which sometimes supervenes after abdominal operations appears to be of similar nature. It should be treated by the immediate use of the tube, and a thorough wash out of the organ; or a gastrostomy may be performed, and the paralysed organ thoroughly irrigated through the fistulous opening. Normal Saline or Glucose solution should be injected hypodermically.

The *Atonic* form of dilatation due to loss of tone in the gastric muscular walls is usually secondary to other stomach ailments, to gluttony or the imbibition of large amounts of fluids, or to a true gastric neurosis, and must be met by a scrupulously regulated diet. This should consist of small quantities of semi-solid, easily digested or peptonised foods administered every two hours or more frequently, the patient being confined to bed at the commencement of the treatment.

Lavage should be carried out every second night to wash out the remains of all undigested food so as to start afresh with a

clean and empty organ. It is imperative that not more than 5 or at most 10 oz. of fluid should be poured into the stomach at one time before siphoning off the contents. The night lavage gives the organ a long rest before the commencement of feeding on the following morning, and the plan so efficacious in gastric ulcer may be carried out during the first half of the day. This consists in feeding the patient with peptonised milk administered with a spoon, only a single spoonful ($\frac{1}{2}$ oz.) being allowed at a time so as to cause the liquid to pass directly into the duodenum, and so permit the weakened organ to have the maximum of rest. The dietetic treatment is to be assisted by abdominal massage, hydropathic measures and electrical or vibratory stimulation.

The secondary symptoms caused by delayed digestion may be relieved by Pepsin and HCl, by Papain, Trypsin or Taka-Diastase and Alkalies; fermentative changes may be retarded by the administration of a 3 to 5 min. Creosote Capsule as in myasthenia gastrica (see Gastric Neurosis). The underlying neurosis may require a course of Weir-Mitchell treatment, but this should not be attempted till local treatment has soothed irritability and restored some degree of tone in the weakened walls of the stomach.

Gradually the semi-solid or restricted liquid diet is to be replaced by one of undercooked minced red meat as in the Salisbury dietary, and farinaceous foods may be given at intervals with Papain or Taka-Diastase when the solids are suspended. Liquids must be administered in small quantities at meal-times, and only in moderate amount between meals.

The atonic dilatation which follows dyspeptic conditions, where the patient has acquired the habit of belching, wind-sucking, or swallowing air with his saliva, yields to the above-mentioned treatment only after the pernicious habit has been stopped. Undue importance should not be attached to nervous symptoms in atonic dilatation, as these very often are the result of the abnormal state of the digestive function instead of being the cause of it. Hence in a case which has started in gluttony or other dietetic error, the nervous phenomena which arise from the enfeebled digestion, if erroneously regarded as proof of the presence of a general neurotic condition, will only be aggravated by a resort to the Weir-Mitchell or other antihysterical treatment.

GASTRIC DILATATION DUE TO PYLORIC OBSTRUCTION.

When this is caused by temporary or periodical blockage or kinking of the duodenum owing to Glénard's Disease, or more especially to ptosis of the right kidney, rest in bed is essential till the symptoms of dilatation or distension pass off. If the cause of the primary enteroptosis is of recent origin as after prolonged strain or rapid emaciation, the rest in bed if sufficiently prolonged may cure the primary as well as the secondary condition. The general treatment is to be conducted upon the same lines as in atonic dilatation, small liquid or semi-solid meals taken at short

intervals, and periodic lavage to wash all residue of food from the dilated organ are clearly indicated if relief does not speedily follow rest. Where vomiting every two, three or more days has occurred, abnormally large quantities being brought up at a time, little is to be expected from rest or abdominal supports, corsets or binders, which are useful in mild cases. Much assistance may be obtained by the patient altering his position in such a way as to permit the contents of the stomach flowing through the pylorus, and this may even prove useful in the atonic type also.

The patient should be taught to use the tube and wash out the stomach every night if he refuses to submit to a radical operation (gastropexy) for the replacement of the stomach, and suturing it in its normal position by shortening the gastro-hepatic omentum and the gastro-phrenic ligament. Gastro-enterostomy may be tried, but its results in this condition are often very disappointing, and the same remark applies to the operation when performed for simple atony. Even when vomiting is remedied the acquired neurotic condition which has been induced by the visceroptosis may permanently remain, making the victim's life unbearable. Little can be said for Bircher's gastroplication operation, which consists in making a series of horizontal tucks by passing wide sutures from the smaller to the large curvature with the view of diminishing the capacity of the organ in its transverse diameter.

Dilatation of the stomach caused by adhesions which drag upon the duodenum from the direction of the gall-bladder may be relieved by operative methods suitable to each individual condition. In some of these cases success has followed the injection of Fibrolysin, which should always be tried before resorting to operation, and this has also been advocated in the next type of stenosis.

CICATRICAL STENOSIS OF THE PYLORUS.—In the common form of dilatation of the stomach due to the cicatrization of old duodenal ulcers, or ulcers at the pyloric end of the stomach, considerable relief may be obtained by a well-regulated dietary and constant lavage, especially when the obstruction is many degrees removed from being complete. But even in these latter cases there comes a time when operative interference is demanded.

Several operations are available : (1) *Loreta's*—this consists in making an opening into the stomach in the region of its smaller end, and stretching the fibrous tissue of the stenosed pylorus by inserting a dilator or the finger. (2) *Hahn's* operation is simpler ; after the stomach wall has been exposed a portion of the anterior surface is invaginated by thrusting the forefinger into the narrowed pyloric portion, and so dilating it without making any incision in the stomach wall. (3) *Pyloroplasty* : This consists in making a transverse or longitudinal incision through the anterior wall of the stenosed pylorus ; the central portion of each lip of the incised wound is next forcibly retracted till the transverse incision is converted into a vertical one, and its lips are then secured by

sutures inserted in the transverse direction or at right angles to its vertical axis. (4) *Pylorectomy* : The operation in which the pylorus and neighbouring portion of the stomach is removed has been recently recommended by Bréchet as the best method of dealing with benign tumours and cicatricial stenosis of the pylorus. (5) *Gastro-duodenostomy* : This operation, which is recommended by Finney and Kocker, is an extension of pyloroplasty, in which the duodenum is made to communicate with the pyloric end of the stomach through an opening made in the anterior wall of the latter.

These operations have practically given way to (6) *Gastro-enterostomy* or *gastro-jejunosotomy*, the latter title implying the portion of intestine which is usually selected for the anastomosis. No. 5 is strictly speaking a gastro-enterostomy operation, but to prevent confusion it is better to associate the term gastro-enterostomy with gastro-jejunosotomy. The object of this operation is to effect an anastomosis through a fistulous opening between the stomach and small intestine so that the gastric secretion and food pass directly through the stenosed organ into the intestine by the newly made route. There are two methods of performing the operation, which are known by the terms *anterior* and *posterior*, according to whether the fistulous opening is to be made in the anterior or posterior wall of the stomach. By common consent posterior gastro-enterostomy is regarded as the most suitable for nearly every case of pyloric obstruction due to cicatricial contraction, though the anterior operation is more expeditiously and easily performed, and is often more suitable in cancer of the stomach. A free incision being made in the middle line or through the right rectus muscle, the colon and stomach are drawn out of the wound and turned upwards ; an aperture is made in the meso-colon in order to expose the posterior wall of the stomach, and a line on the latter is selected for the site of the fistulous opening. This should be near the lower curvature extending downwards in the direction of the long axis of the portion of jejunum. The portion of jejunum to be opened is next sought for ; the site of its incision is an important matter in order to avoid the danger of kinking afterwards. The best point according to Moynihan should be as close to the duodeno-jejunal flexure as possible, the anastomosis being made vertical and in the middle line, thus avoiding a loop. An elliptical piece of mucous membrane is then to be excised from the stomach and intestine, and the anastomosis completed by a double row of sutures. Mayo makes the opening run obliquely from above downwards and to the left, the piece of jejunum running from right to left. The meso-colic aperture is to be carefully closed round the anastomosed bowel by sutures in order to avoid the possibility of a future hernia.

The parts are returned to the abdominal cavity after a scrupulous toilet has been effected and all bleeding-points arrested, and

the edges of the wound in the different layers of the abdominal wall are brought together by separate sutures.

Upon being put to bed with his shoulders raised, rectal feeding is to be commenced and continued till all efforts at vomiting have passed away, after which small quantities of water, followed by similar amounts of liquid nourishment, may be cautiously administered.

The mortality of the operation has by improved methods in technique fallen to a trifle; thus in the hands of Moynihan gastro-enterostomy for gastric ulcer has not exceeded 1 per cent.

Stenosis of the pylorus in infants is either due to muscular spasm or hypertrophy of the circular muscular fibres and is speedily followed by gastric dilatation which usually fails to respond to restricted feeding, and must be promptly met by pyloroplasty, by Finney's operation or by gastro-enterostomy. Sometimes this state is met with in adults as a remnant of the congenital condition, and such cases get along fairly well for a long period by resorting to liquid diet and constant lavage, but ultimately a pyloroplasty will be required. When the condition is met with in aged and debilitated patients who have suffered for many years, restricted feeding and lavage afford a better prospect for prolongation of life than that held out by an operation.

GASTRIC TETANY is the name given to a series of grave nervous symptoms liable to arise in patients suffering from dilatation of the stomach. The condition is regarded as the result of a toxæmia by products formed in the dilated organ, and as it has sometimes supervened during lavage or upon the introduction of the tube it cannot be safely met by this method of washing out the dilated stomach. The patient should be made to vomit when possible by drinking large draughts of lukewarm water, which should be repeated in order to thoroughly wash out the organ. Warm Saline solution should be injected into the rectum and into the loose cellular tissue about the armpits, breasts and groins to remedy the dehydrated condition of the blood and tissues. A hot pack, as in the treatment of uræmic conditions, has proved a valuable remedy in the writer's hands in eliminating the toxic products through the skin. Gastro-enterostomy has been successfully performed in some cases after the symptoms have abated.

MALIGNANT STENOSIS OF THE PYLORUS causing gastric dilatation should be treated in the main upon the above lines. After abdominal section, if the malignant growth is limited in extent pylorotomy may be found a practicable operation, and the pylorus and the neighbouring region of the stomach should be removed. Where the removal of the diseased mass is difficult, a gastro-enterostomy may be performed first, and after an interval when the patient has regained sufficient strength the pylorus may be excised. In hopeless cases beyond the reach of a resection much relief and prolongation of life may be afforded

by a gastro-enterostomy when the pain and vomiting are incessant.

In these cases a considerable amount of exhaustion being already present, the duration of any operative procedure is often a vital point, and the surgeon may well consider the advisability of performing the *anterior* operation, in which the stomach opening is made in the front wall of the organ nearer the cardiac than the pyloric end, and the anastomosis effected with the jejunum about 18 inches from its junction with the duodenum.

There is yet another type of gastric dilatation which, however, never reaches to the great dimension of the previous varieties. This is the form in which an open ulcer exists at the pylorus, the irritation caused by the existing hyperchlorhydria causes reflex spasm, and keeps the opening shut. The best procedure in such cases is at once to resort to gastro-enterostomy.

GASTRIC INFLAMMATION (Gastritis).

Acute Catarrhal Gastritis or acute *Gastric Catarrh* is usually accepted as a synonym for Acute Dyspepsia. There should, however, be no misconception about the restriction of the synonym to certain cases. In the article on Dyspepsia the causes of an acute attack are discussed; amongst these are errors in diet or cookery, &c.: the improper food acts like a powerful irritant to the gastric nerves, pain and vomiting supervening almost as after the administration of an emetic, and the typical acute dyspeptic attack has probably no element of catarrhal inflammation in it whatever, the patient recovering within an hour. Where, however, the irritating cause is repeated often, catarrhal inflammation may be accepted as present when the attacks cease to speedily pass off after the original exciting cause has been stopped.

The treatment in the main is that of an attack of simple acute dyspepsia, but as vomiting has almost always occurred before the patient comes under observation there is seldom a necessity for administering an emetic; a local irritating emetic like zinc sulphate should never be given; copious draughts of lukewarm water with the view of washing out the organ are all that are requisite; to these a little Sodium Bicarbonate may be advantageously added, as the alkali assists in the removal ofropy mucus.

Feeding by the mouth should be stopped for a day or two in severe cases until the membrane gets rest, nutrient enemata being resorted to in the meantime. Vomiting and pain should be met by *small* doses of Morphia combined with Bismuth and Hydrocyanic Acid (see recipe on p. 258). Where there is a thick coating of fur on the tongue with much nausea and retching a plain effervescing mixture every two hours gives better results. 40 grs. Bicarbonate of Potash should be administered in solution with each $\frac{1}{2}$ oz. fresh lemon-juice, and a large sinapism may be applied to the gastric region. As soon as vomiting ceases, a brisk saline purge should be given, and a spoonful of iced milk mixed with

effervescing kali water or liquor calcis may be administered every few hours.

The catarrhal condition subsides upon the withdrawal of the cause, and as this is usually due to errors in the selection or cooking of the food, imperfect mastication or irregularity in meal-hours, &c., these points should be thoroughly investigated, and the general directions detailed in the article on Dyspepsia carried out.

The treatment of *Acute Toxic Gastritis* is that of the poisoning by the mineral irritant which is operating as the cause of the acute inflammation. This will be found under Arsenic, Phosphorus, Mercury, &c., in the article headed Poisoning.

Acute Phlegmonous or Suppurative Gastritis is a rare and almost invariably fatal disease for which little can be done, as the affection runs a course too rapid to admit of vaccine or serum therapy. Relief may be obtained by rectal and hypodermic injections of normal Saline solution and by Morphia given hypodermically.

Chronic Gastritis.—As acute catarrh of the stomach is usually accepted as a synonym of acute dyspepsia, so chronic gastric catarrh is by many regarded as identical with the tangled web of symptoms known as "chronic dyspepsia." That the primary error is not of inflammatory nature in the strict sense in which we use this term is at once obvious when we see how speedily the chronic dyspepsia disappears upon removal of the exciting cause.

The first step in the treatment of chronic catarrhal gastritis should be a minute search for every possible factor which causes simple dyspepsia. These have been dealt with in the article on Dyspepsia, and need not be here recapitulated. The gastric symptoms may be counted upon with confidence to fade away as soon as the diet, imperfect mastication, belching habit, oral sepsis, improper cookery, &c., have been corrected. Rarely will drugs be required unless in those very chronic alcoholic cases where the disturbing factor has been long in operation and has established an atony leading to gastric dilatation, in which case the dyspeptic condition has glided from that of a simple dyspepsia into an inveterate gastric neurosis, or ulcers may have formed. In addition to the remedies mentioned under Dyspepsia, lavage, massage, electricity and even gastro-enterostomy may be then demanded, as detailed in the articles on Gastric Dilatation and Gastric Neuroses.

GASTRIC NEUROSES.

The connection between functional affections of the stomach and the tangled web of symptoms recognised under the name of dyspepsia has already been dealt with in the article on Dyspepsia, which should be carefully studied in association with the following remarks.

The gastric neuroses are usually divided into the Sensory, Secretory and Motor types.

The success of every step in the management of a gastric

complaint obviously depends upon accuracy in diagnosis; organic affections being eliminated, the next procedure should be to investigate the well-recognised causes which produce simple acute or simple chronic dyspepsia. It is a very common error to assume that every symptom of disturbed digestion occurring in a neurotic subject—hysterical, neurasthenic, neuralgic or migrainous—is due to a true neurosis of the stomach. It is this mistake which has surrounded the treatment of functional stomach affections with such difficulty. It is an unquestionable fact that many highly neurotic individuals digest their food normally, hence the mere discovery or recognition of a general neurosis should never be accepted as evidence that the gastric disturbance is part of this until the ordinary every-day local causes of dyspepsia can be eliminated. These as laid down in the article on Dyspepsia are errors in cooking and dietary, imperfect mastication, belching or wind-sucking, caries of the teeth, irregularity in meals, &c.—causes which operate upon the digestive function of the typically healthy and neurotic alike. It is therefore futile to treat a case of dyspeptic trouble in an hysterical patient by Weir-Mitchell or other method when the commoner causes are left uncorrected. These being in every instance eliminated, the treatment of a gastric neurosis may be then entered upon with confidence.

SENSORY NEUROSES.

Gastralgia or *Gastrodynia* is the most important of these. The treatment will resolve itself into the management of the case during the attack and during the intervals between the paroxysmal seizures.

Pain must be relieved promptly, as this is often as agonising as in angina, gall-stone colic, or acute perforation. The ideal treatment would be a hypodermic of Morphia were it not for the fact that the attacks are certain to recur and the repeated resort to the narcotic would establish the morphia habit. There is not so much danger of this if the drug be given by the mouth combined with other sedative agents. A good routine pain reliever will be found in 45 grs. Bicarbonate of Soda with $\frac{1}{8}$ to $\frac{1}{4}$ gr. morphia. Antipyrine 10 grs. or a proportional dose of any of the new analgesics or of Chloral Hydrate, or 5 mins. Oil of Peppermint combined with an equal quantity of Chloroform or Ether, may be tried.

Ewald's favourite combination for the relief of gastric pain and hyperæsthesia in irritative conditions of the gastric nerves with or without vomiting is—

R. *Morph. Hydrochlor.* gr. iij.
 Cocainæ Hydrochlor. gr. vj.
 Tinct. Belladonnæ ʒij.
 Aquæ Amygdal. Amaræ ʒj. *Misce.*

Ft. solutio. *Sig.*—10 to 15 drops every hour.

He also advocates washing the stomach out with $\frac{1}{2}$ per cent. Chloroform water.

Counter-irritation by Mustard applied over the stomach or an iced poultice to this region may cut short the attack. Electricity in the form of the continuous current sent through the gastric region or the Faradic current applied to the sympathetic or pneumogastric sometimes does away with the necessity of narcotics.

A full draught of hot water containing a drachm of Bicarbonate of Soda may cut short the attack, and if vomiting follows so much the better, as by this means the stomach is washed out.

Mild attacks of gastralgia often yield to a 3 to 5 min. capsule of Creosote or to the same dose of Hydrocyanic Acid given with 30 grs. Bismuth Carbonate. Sometimes a full dose of powdered Charcoal in wafer paper cuts the attack short. In severe paroxysms the inhalation or internal administration of a few drops of Nitrite of Amyl may be tried.

Between the attacks the underlying neurosis must receive judicious attention, and the usual agents found suitable in hysterical conditions should be administered, as Valerianates, &c. Some authorities regard the gastralgia as a true neuralgia of the gastric nerves, and treat it with large doses of Quinine and Iron between the attacks. Arsenic is a drug of great value, and Siebert affirms that if gastralgia be not due to organic disease it will be speedily cured by arsenic. The best routine will be to give 1 min. Fowler's Solution before meals in 2 drs. water for a few weeks, and then 2 mins. with 30 grs. Bismuth after meals for a couple of weeks. The Salts of Silver appear to act in a similar beneficial manner.

Allbutt and others lay stress upon the necessity of a prolonged rest in bed. Apart from the consideration of the underlying neurosis and its treatment, anything which experience demonstrates to be an exciting cause must be remedied, as prolonged fatigue of body or mind, fasting or dietetic errors.

Gastric Hyperæsthesia is closely allied to gastralgia, but it may be constantly present without gastralgia, and like it is often worst when the stomach is quite empty. Arsenic and Nitrate of Silver in *small* doses afford the best routine for these cases when given in alternate courses of 2 or 3 weeks' duration a short time before food. Large doses of Bismuth with $\frac{1}{16}$ to $\frac{1}{32}$ gr. Morphia may be given after or between meals. A blister to the pit of the stomach is the writer's preliminary method in all cases. In very irritable patients relief may be obtained by the application under oiled silk of a liniment consisting of 1 part of Lin. Belladonna and 4 of Lin. Chloroform.

Heartburn when not accompanied by pyrosis or water-brash may be regarded and treated as gastric hyperæsthesia; when occurring in acute attacks it should be relieved by large doses of alkalies, as in the treatment of gastralgia.

Anorexia Nervosa is best treated by the Weir-Mitchell method with complete isolation and forced feeding if necessary. Mild cases sometimes speedily respond to the introduction of the nasal tube through which the stomach is to be moderately filled with liquid food; the forced feeding, acting through its moral influence, soon induces the patient to eat in order to avoid repetition of the operation. Bitter tonics should be persevered with, and even Strychnine which nearly always aggravates the usual symptoms of hysteria may be safely given in small doses before meals.

The abnormal sensations included under the head of sensory neuroses, such as *Bulimia*, *Polyphagia* or *Akoria*—the opposite condition to anorexia—and *Pica* or *Coprophagy*, where indigestible substances or dirt are hankered after, if not due to insanity must be treated as manifestations of the hysterical condition. The dietetic regulations for such patients, it is hardly necessary to say, will require the strictest supervision.

SECRETORY NEUROSES.

Hyperchlorhydria is the most important of these, but the grave mistake of confusing this affection with the far more common condition universally recognised by the simple term "acidity" should never be made. The disease under consideration is characterised by the presence of excess of free *hydrochloric* acid in the gastric secretion, and cannot be recognised without a careful examination of the gastric contents. In health the percentage of free HCl varies from .1 to .2 per cent., and the total acidity to under 70 per cent. (As hyperchlorhydria is commonly present in gastric ulcer cases, this latter affection must be eliminated before the treatment of a gastric neurosis is entered upon.)

In the article on Acidity the fact is made clear that in many if not in the majority of patients suffering from acid dyspepsia the acidity is due to the presence of *organic* acids—*butyric*, *lactic* or *acetic*. These are derived from the food ingested or are formed during imperfect, delayed or interrupted digestion, their presence being commonly caused by eating over-baked fatty foods, to imperfect mastication or bolting, or to pyloric obstruction, or to a motor neurosis which keeps the food too long in the stomach. It is a most important fact which must not be lost sight of in the treatment of all stomach affections in which distressing acid sensations are prominent that this condition may be really due to the absence of HCl or diminution in the secretion of healthy acid gastric juice.

The lines of treatment of hyperchlorhydria when this is due to a pure secretory neurosis are clear. The underlying hysterical or neurasthenic condition must receive careful attention, and menstrual irregularities and chlorosis will require correction. The diet is of great importance; farinaceous and fatty foods of all

kinds should be given in small amount; undercooked red meat or Salisbury diet answers most indications. A line of treatment directly opposite to this is recommended by Walks and Fischal, who administer a diet in which Cream and Olive Oil figure conspicuously on the theory that vegetable oils or animal fats lessen the production of HCl, and at the same time hasten the digestion of albumins. This method of dietetic treatment is more satisfactory in cases of hypersecretion than in pure cases of hyperchlorhydria where the gastric juice may be normal in amount, though hyper-acid. It may, however, be tried in the latter condition, and if found satisfactory it may be safely continued. Where the excess of acid has already induced irritability of the stomach and vomiting, a pure milk diet may be tried. Peptonised foods usually aggravate matters.

As the hyperchlorhydria is usually intermittent, and acute attacks often cause much distress, relief should be sought in the administration of large doses of Alkalies; Bicarbonate of Soda may be freely given even for considerable periods, and there is no remedy of such constant value as the Papain, Soda and Magnesia combination mentioned upon p. 11 in the article on Acidity. When a large dose of alkali is administered during digestion the sudden neutralisation of the HCl arrests the digestive process, as pepsin only acts in an acid medium, but with papain the function is hastened as this vegetable ferment acts in an alkaline, neutral, or even acid medium. The magnesia in addition to its alkaline reaction corrects the constipation which is usually present, and which tends to perpetuate the diseased condition.

An occasional lavage of the stomach is highly beneficial in all severe cases. Gastro-enterostomy has been recommended for hyperchlorhydria, but the operation should be restricted to those cases which are not examples of a pure gastric neurosis.

Hypersecretion or Gastrosuccorrhœa.—When this condition is continuous it is known as *Reichmann's Disease* or *Pyloric Spasm*, where large quantities of acid gastric secretion are constantly manufactured independent of the presence of food. Whilst the underlying neurosis is being attended to by appropriate agents the diet should be restricted to albuminoids, undercooked lean meat, fish or poultry, with a limited amount of fluids at meal-times. Alkalies may be freely given as in the combination just mentioned, and when this is administered farinaceous foods may be safely permitted. Copious draughts of lukewarm water should be taken with the view of washing out the stomach, and it is a good practice to carry out stomach lavage every second or third day, using a weak alkaline solution for the purpose. When the condition resists this treatment a diet consisting of large amounts of cream and olive oil with fresh saltless butter and dry toast or biscuit may be tried.

The acute intermittent type of this neurosis known as *Ross-*

bach's Gastroxynsis should be treated promptly at the commencement of the attack by the administration of an emetic such as a very large draught of lukewarm water, which should contain a full dose of Sodium Bicarbonate to neutralise the excess of acid, as this may cause severe irritation of the epiglottis as it comes up the gullet.

The rubber stomach-tube may be passed as soon as the attack declares itself, but even then an alkaline solution should first be introduced into the organ before siphoning off the contents, as vomiting often comes on during the process. It will be well to thoroughly wash out with weak Permanganate of Potash or Creosote solution, and Nitrate of Silver (10 grs. to the pint) has been used to finally wash out any remaining secretion, care being taken that the whole of the liquid is siphoned off.

After the relief of the distress caused by the excess of scalding acid secretion Alkalies should be steadily persevered with and Bismuth given along with them in full doses.

Hypochlorhydria—the opposite condition to hyper-acidity—is best met by free Hydrochloric Acid and full doses of Pepsin combined with Strychnine, given along with or soon after meals, vegetable bitters being prescribed before food.

R. *Acid. Hydrochlor. Dil.* *ʒiij.*

Liq. Strychninæ Hyd. *ʒj.*

Glycerin. Pepsinæ ad ʒiv. Misce.

Fiat Mistura. Cpt. ʒj. ex ʒij. aquæ cum cibum.

When the subacidity is accompanied by fermentative changes which cause excess of the *organic acids*—a common condition—and by all the misery of acid dyspepsia, then the Papain and Alkali combination should be resorted to, as under these circumstances free HCl often aggravates matters, and Creosote is very valuable. The diet must be light and as easily digested as possible ; in severe cases bordering upon the next-mentioned type, the dietary must consist of peptonised foods.

Achlorhydria.—In this neurosis, which is a degree further added to subacidity, and in *Achylia Gastrica*—a condition in which there is neither HCl nor pepsin secreted—the treatment is the same, only the dosage of the acid and pepsin combination must be greater, and all foods must also be peptonised till the normal secretion begins to return, after which gradually increasing quantities of simple food, as milk and strong soups, may be administered. This type of neurosis in all its degrees of severity from simple hypochlorhydria to achylia supplies many of the cases which were formerly labelled *Atonic Dyspepsia*. When in addition to the diminution or absence of the normal secretion, and as the direct result of this deficiency, fermentations are set up, the clinical picture changes to *Irritative Dyspepsia*, where

pyrosis, vomiting, heartburn, &c., are prominent from organic acidity (see under Dyspepsia). In this latter condition the vegetable bitters should be withheld till Papain and Alkalies with a minute dose of Morphia ($\frac{1}{20}$ gr.) have soothed the gastric irritability, after which pepsin and acid may be administered and an occasional lavage is beneficial. Sometimes Pancreatic preparations are more suitable than pepsin, and their action is not weakened by the administration of Creosote.

OTOR NEUROSES.

These include *Peristaltic Unrest* or *Hypermotility*, *Nervous Vomiting*, *Rumination* or *Merycism*, *Belching*, *Gastric Spasm*, *Gastric Atony* and *Pyloric Insufficiency*. It must be kept in mind that all these common conditions may be but the symptoms of organic stomach disease or of a simple dyspepsia caused by the continual violation of the health laws which should govern the selection and proper cooking of food, mastication, regularity of meals, oral asepsis, &c., and treatment of each varied condition on the lines of a true gastric neurosis should not be commenced till all these primary causes have been eliminated. Upon the other hand the difficulty is not lessened by the fact that theoretically any one or more of these neuroses may be the only visible sign of an underlying general neurosis, though often hysterical or neurasthenic manifestations are also present. It never must be forgotten that the imperfectly performed gastric function (due to local conditions) will of itself produce nervous symptoms liable to be accepted by the theorist as proof of the presence of a general neurosis which does not exist. But, as insisted upon before, the mere presence of hysteria must not determine the diagnosis. Take, for example, the case of *belching*. This generally is a mere habit first started by some temporary flatulent distension produced by an accidental error in diet. The individual by voluntary effort eructates or belches up the gaseous contents of the stomach; more air is swallowed in the act during the descent of the diaphragm, and the stomach becomes more and more distended. The same results follow constant attempts at swallowing saliva. As the air passes into the bowel, borborygmi are produced and some relief obtained, but if there be any irritable condition of the stomach present spasm of the pylorus prevents this, and the stomach becomes blown up like a balloon, a condition known as *gastric spasm* or *pneumatosis* being produced. This "wind sucking" is possibly never the result of a neurosis, and is cured readily in its early stages by explaining the dangerous results following the purely volitional act of belching. It is obviously more liable to become a habit in neurotic patients, and Rumination is a somewhat similar habit, and only removable by educational methods.

Nervous vomiting is, however, a true neurotic phenomenon, and can only be removed by a rigid treatment directed against the

underlying neurosis. Regular lavage by its moral effect often speedily effects a cure.

Peristaltic unrest (Kussmaul) and the borborygmi which often are produced by emotional excitement may be remedied by rest after eating. The diet should be restricted to small quantities of solid food ; a very limited amount of fluid should be ingested, and constipation must be guarded against. The condition is more frequently the result of motor weakness than of motor excess, in which case the stomach contents are delayed instead of being hastened in their passage through the pylorus, as is frequently stated to be the case. Occasional lavage is beneficial, only a limited amount of fluid being poured into the stomach each time before siphoning off. Small doses of Strychnine, if they do not intensify the symptom, are often highly valuable.

Pyloric insufficiency always yields to Strychnine, as it depends upon a paralytic or weakened state of the sphincter caused by over-stimulation. The drug should be administered as soon as the diagnosis is made clear by passing the rubber tube 30 or 40 minutes after a test breakfast, when the organ will be found empty. This premature emptiness is rarely, if ever, due to hypermotility, which would be increased by strychnine, and it is doubtful if this latter condition really ever exists alone. Local massage and Electricity are useful adjuvants to the strychnine treatment.

Atony of the stomach is a common if not a constant condition after all severe exhausting illnesses, and in its established form—*Myasthenia Gastrica*—it is the best-marked type of a true gastric motor neurosis, and as such supplies the most typical example of the *Atonic Dyspepsia* of old writers (see *Dyspepsia*). The underlying neurasthenia must be met by a prolonged rest from all mental labour, and, when possible, by a complete change of environment, with moderate open-air exercise and the benefits of cheerful companionship with changes afforded by varied travelling and sight-seeing. This is a line of treatment essential when the affection is the direct result of over-study, prolonged anxiety or grief, or too close application in any professional or business occupation.

When travelling is impossible, hydropathy, golf, gymnastic exercises, massage, and electrical treatment may be tried. Owing to the feebleness of the gastric muscle and the tendency towards dilatation of the organ, Weir-Mitchell treatment should not be resorted to at once, though this is an ideal method later on.

The diet must be carefully regulated, as in cases of dilatation ; only small amounts of easily digested solid foods should be given at intervals not exceeding two or three hours in duration, and liquids should be confined to the intervals between meals. At first a short rest after each meal should be insisted upon ; gradually as the meals become more voluminous, less precaution is necessary.

Lavage will be indicated where, owing to the long delay of the food in the stomach, secondary fermentative processes set up organic acidity, but the amount of fluid poured into the stomach before siphoning must be limited. The passage of the stomach contents may be facilitated by gentle abdominal massage, vibratory or electrical stimulation.

Drug treatment can achieve much. In the absence of irritability a vegetable bitter before meals may be given. Strychnine is, however, the main remedy upon which reliance is to be placed. It should be administered shortly after meals in combination with Pepsin and HCl. The pepsin can be omitted often with advantage in the early stages of treatment, when it is necessary to peptonise the food. Papain and Alkalies are invaluable when organic acidity is present. By administering Pancreatic preparations or Taka-Diastase starchy and farinaceous foods may be safely permitted. It is needless to say that pepsin should never be added to the food previous to swallowing, though pancreatic ferments can be so utilised with advantage both in rectal and mouth feeding.

The treatment of atony of the stomach, when this has ended in inducing a permanent dilatation of the organ, is more fully detailed in the article on Gastric Dilatation on a previous page.

GASTRIC ULCER AND DUODENAL ULCER.

Uncomplicated *acute* gastric ulcers, when treated early, usually heal rapidly. The main agents for insuring this are rest and proper feeding, drugs taking a subordinate place.

Rest.—There must not only be rest to the stomach as far as is compatible with the demand for nutrition, but bodily rest as near to absolute as possible is also essential. The patient should be put to bed and encouraged to lie flat upon his back or in whatever position affords him the greatest ease and comfort. It is a good rule for the physician to state at the onset that this rest-cure must be maintained for a definite period—say, 6 weeks—so that the patient may at once become resigned to his position, and cease worrying from day to day expecting to be permitted to leave his bed and being daily disappointed at not being allowed his freedom. He may be permitted to read, but the holding up of a heavy volume or any other exertion bringing his voluntary muscles into constant or periodical action must be forbidden.

Rest to the stomach is to be afforded at the start by rectal feeding should pain or vomiting be prominent or should hæmorrhage be present. In the absence of all these the feeding by mouth with small amounts of liquid nourishment may be commenced. The milk may advantageously be peptonised or fresh milk diluted with half its bulk of lime or Kali water may be used. The object of the physician should be to administer the liquid nourishment in such small quantities at a time as will enable it to pass through the pylorus directly into the duodenum, thus

avoiding gastric digestion as far as possible. In obstinate cases this may be usually satisfactorily accomplished by a nurse feeding the patient with a spoonful of milk at a time. If the vessel containing the liquid nourishment be handed to the patient he is liable at times to take such a draught of its contents as will reflexly call upon prompt closure of the pylorus till the casein is precipitated and the digestion of the mass is attended with all the ill consequences of a meal of solid food.

Vomiting is often arrested by this procedure, and after a few days the amount given at a time may be gradually increased as the intervals are lengthened, and by the end of about 8 or 10 days smooth semi-liquid arrowroot or other impalpable farinaceous food may be cautiously tried in small quantities. Strained soups may be permitted should the patient resent a pure milk dietary. By the end of the second week he may be allowed to swallow 5 oz. milk every hour during the twelve hours, which are ample for all the requirements of the body. Before the end of another week custard-pudding or carefully prepared boiled crumb of bread and milk may be given two or three times a day as an approach to the normal feeding-time of three or four times daily is made.

Should the nutrition of the body continue satisfactory, it is a wise precaution to advise the patient to restrict himself for several weeks after he begins to move about to a smooth diet, such as is prescribed for typhoid fever.

The Lenhartz method of treating gastric ulcer is similar to the above. He commences with milk, and beaten-up egg given in teaspoonful doses, and inside a week adds raw minced meat to the liquid, followed in a few days by boiled rice, reaching a full mixed diet in 4 weeks.

Rectal feeding is imperative where severe vomiting or recent hæmatemesis has been present. The entire colon should be flushed out with a large tepid enema of water containing a teaspoonful of Bicarbonate and of Chloride of Sodium, soapy injections being unadvisable. A nutrient enema of peptonised milk (5 oz.) is after a short interval to be introduced every 4 hours by a rubber tube 3 or 4 feet in length attached to a funnel, and every morning before recommencing rectal feeding the rectum or colon is to have one thorough wash out. When the patient shows tolerance of the enemata it will be wise to double the bulk of each and to lengthen the interval between them, by which means three or even four $\frac{1}{2}$ pints of fluid may be administered during the waking hours. The peptonisation of the milk may be safely permitted to proceed much farther than if prepared for mouth administration; thus it should be allowed to continue till marked bitterness is produced. Beaten-up eggs, gruel and ox-blood, and finely chopped meat and pancreas have been recommended, but the best results are obtainable from freshly peptonised milk and peptonised beef-tea or chicken-soup injected

alternately. Eggs are especially liable to irritate the rectum after a time, but uncooked white of egg can often be peptonised along with the milk or soup.

For all ordinary purposes a week should be the limit during which the rectal feeding should be persisted in for maintaining the nutrition of the body ; often 3 or 4 days suffice. But circumstances often arise in which a combined mouth and rectal alimentation may be advantageously employed for long periods, and the writer frequently directs that the small quantities of milk administered during the first 10 days by the mouth should be supplemented by a nutrient suppository every 4 hours, and this is a most satisfactory practice, against which no objection can be seriously made.

By the above rest and dietetic method, most cases of gastric ulcer can be effectually dealt with, and perfect healing of the sore secured in 4 to 6 weeks, and often less, but the return to solid food must be tentative and cautious, the experiment being best made first with well-boiled soft white fish, followed afterwards by tender young chicken, minced under-cooked red meat, or a portion of the fillet of an under-cooked sirloin.

Drugs are indicated only for the relief of prominent symptoms arising during the treatment. Thus Opium or Morphia are always most valuable when irritability of the stomach is present, but they should be given in such minute doses as do not affect the cerebrum, as first suggested by Trousseau ; a morphia perule ($\frac{1}{20}$ gr.) is often most effective in preventing vomiting. Being not larger than the head of a pin, it seldom is ejected, and Brinton believed that opium always facilitated the healing process in the ulcer.

The complications which arise in severe cases will, however, usually afford marked indications for the exhibition of drugs, thus :

Pain.—When this is severe, a small blister (3 by 3 inches) should be applied in the middle line half-way between the sternum and umbilicus. It is more efficacious and often less irritating to the patient than a large sinapism. Warmth may be soothing, but occasionally ice affords relief. Pain should always be an indication for rest if the patient be not already lying up for treatment. Morphia in $\frac{1}{20}$ gr. doses may be safely given at short intervals, and some physicians still place their faith in the pain-relieving reputation of Bismuth. $\frac{1}{60}$ gr. Atropine may be tried where opium is contra-indicated, or 2 mins. Hydrocyanic Acid or a $\frac{1}{4}$ gr. Cocaine may be combined with the bismuth. Often a small soft gelatin capsule containing 1 min. Creosote acts as a local analgesic, and a small piece of ice swallowed whole may be taken along with it.

In subacute and chronic ulcer the pain, which is often markedly aggravated by changes of posture, is usually due to the traction on old adhesions, and has been successfully met by injections of

Fibrolysin. A. B. Mitchell, in a case where this treatment was being pursued (but which demanded abdominal section owing to perforation), found that old fibrous adhesions away from the seat of ulceration were already so softened and disintegrated that they broke down on a touch from the finger. The pain in chronic ulcer has been sometimes relieved by a 1-min. dose of Fowler's solution.

When the pain in recent and active cases is due to hyperchlorhydria marked relief may be obtained by administering alkalis. Carlsbad and Vichy Waters have been given with much success for this purpose, and Jaworski has demonstrated that the former has the power of diminishing hyper-secretion. Ewald likewise pronounces in favour of Carlsbad Water.

Vomiting.—When this does not yield to minute doses of Morphia a sinapism or ice to the epigastrium and small particles of ice by the mouth and rectal feeding must be instituted. In rare cases vomiting may be actually produced by the nutrient enema when it was previously absent as a symptom. 12 to 24 hours of starvation may then be the only resource left to the physician during which normal Saline or Glucose solution should be injected hypodermically. As a last resource a full dose of Morphia hypodermically may be given. Effervescing liquids may be tried, but they are often useless, and Champagne usually aggravates the condition. The writer has seen sour Buttermilk retained when everything else was speedily rejected; especially when a small quantity of Kali water is previously mixed with it its sedative action is most valuable.

The Bismuth mixture on p. 258 may be used in ordinary cases as a safe routine, and Cocaine, though useless by itself, may be combined with it.

HÆMATEMESIS.—Rest, if not already enjoined, must be insisted upon, and ice applied to the stomach between two layers of lint, or a light extemporised ice-bag made of gutta-percha tissue may be laid over the epigastrium. All food by the mouth must be stopped, and even ice by the mouth, if given at all, should be only permitted in such minute quantities as will serve to assuage intense thirst. A little may be safely permitted for sucking in the mouth if the water be allowed to flow out without swallowing it.

Rectal feeding must be resorted to, but before introducing the peptonised milk an enema containing 60 grs. of Chloride of Calcium dissolved in 4 oz. water should be given. In severe hæmorrhage, when this is not retained, the physician should give a large hypodermic injection of Saline solution, with which 30 grs. of the lime salt may be combined.

20 mins. Adrenalin Solution (1 in 1,000) may be given every hour for three doses in a teaspoonful of water should the hæmorrhage continue, and both drugs may advantageously be used at the same time, the calcium being given by the rectum and the

adrenalin by the mouth. A full hypodermic of Morphia is often very necessary to allay the profound nervous excitement usually occasioned by the bringing up of large quantities of blood. All so-called astringent remedies, including ergot and turpentine, should never be given.

The Hart treatment of gastric ulcer is said to be of special value in bleeding cases. It consists in rest and restricted dietary, with the administration of 1 dr. of fresh serum obtained from the blood of the horse diluted with 3 drs. water three or four times a day.

Severe recurring hæmatemesis is a clear indication for surgical measures as soon as the shock of the hæmorrhage has been tided over.

Many authorities insist upon the importance of Iron in the treatment of all cases of gastric ulcer, and it is a routine in Lenhart's method; he gives 5 grs. of the sulphate in pills *ter die*, beginning at the end of the first week. Ewald likewise commences Iron and Arsenic as soon as the acute symptoms have subsided, and he maintains that both drugs are always well borne in the disease. In hæmorrhagic cases, after the bleeding has been stopped, certainly iron is more clearly indicated, and the best method of employing it is to give teaspoonful doses of a 2 per cent. solution of the Perchloride mixed with a wineglassful of solution of egg albumin in water (1 in 3) sucked through a glass tube. The administration of iron by the rectum, as recommended by several, is probably a mistake, since recent researches have demonstrated that the metal is eliminated by the mucosa of the rectum. Saundby administers 2 grs. Sulphate of Iron with 60 grs. Magnesium Sulphate in 1 oz. water, and Bourget washes the stomach out with a 2 per cent. solution of the Perchloride, to which $\frac{1}{2}$ per cent. Chlorate of Potash has been added.

Nitrate of Silver in full doses (2 grs.) given in pill has been recommended in mild recurring hæmorrhage in acute cases, and as a routine in simple chronic cases with the view of exciting healing; and Stewart injects the stomach with a 1 in 1,000 solution ($17\frac{1}{2}$ oz.), which is siphoned off after 2 to 4 minutes, the stomach being then washed out; a large dose of Bismuth suspended in water is left in the viscus. Operative treatment will be considered later on.

PERFORATION.—Operative measures must be resorted to with as little delay as possible as soon as the signs and symptoms of this grave complication have manifested themselves. The case for operation may be stated in the following sentence. Without operation 5 in 100 cases at the most can be expected to survive; with operation a similar number may be expected to die. This places the mortality of the operation for gastric perforation at only 5 per cent., the figure which Mayo Robson believes it will reach when all cases are operated upon promptly after the perforation. At present the mortality is much higher because many cases are included in the statistics where operation has been

postponed till peritonitis has been established. The first important point in *acute* perforation is that of the time for operation ; some surgeons prefer to wait till the first symptoms of shock have passed off, whilst most others advocate immediate operation in all cases. The best procedure in the great majority of cases is to immediately give a large rectal injection of warm Saline solution, elevate the foot of the bed so as to depress the patient's head, and give several hypodermic injections of warm Saline or Glucose solution, and apply warmth to the surface of the body. These measures will not only tend to remove the symptoms of shock caused by the perforation, but they will also minimise or prevent the shock of the operation itself ; by the time that they have been carried out the surgeon may proceed to open the abdomen. In a small percentage of cases where the perforation has been extensive the surgeon may feel compelled to wait longer, but as the absorption of the extravasated stomach contents is perhaps the main cause of shock every hour's delay increases the danger.

An incision being made in the middle line or through the right rectus above the level of the umbilicus, the stomach is exposed and the perforation sought for. Where the ulcer is small this may be completely excised ; if large, its ragged margins should be trimmed, and after infolding the serous surface the aperture is closed with Lembert's sutures.

There is still much difference of opinion about whether or not as a routine a gastro-enterostomy should be performed at the same time. The case for the anastomosis operation is clear and decided if there is more than one ulcer present, or if the perforated ulcer is a large one. Upon the other hand, it is clearly contra-indicated in the presence of a purulent peritonitis, and is unnecessary when the surgeon is satisfied that there is only one ulcer, and this a small one on the upper curvature near to the cardia. In the case of perforation from a large ulcer with extensive shock and hæmorrhage, the edges being infolded and the aperture closed, it may be wise to postpone the gastro-jejunosotomy till the patient has completely recovered from the primary operation.

The toilet of the peritoneum must be thorough, and all extravasated contents carefully wiped away. When the aperture has been a large one and the stomach has been full at the time of perforation it may be necessary to make a counter-opening above the pubes and flush out the entire abdominal cavity, and leave *in situ* a drainage-tube inserted well down into the pelvis. The patient should be propped up in the sitting posture in bed and Murphy's continuous rectal infusion commenced.

The treatment of so-called *chronic* perforation in which adhesions have formed and a localised peritonitis or perigastric abscess results, and of the *subacute* or leaking perforation, must differ with the different conditions found after an exploratory incision. Where the ulcer is on the anterior surface of the

stomach the operation of *Gastrolysis* may be undertaken ; this consists in separating the adhesions and dealing with the ulcer by excision or otherwise. But as these chronic perforations are usually inaccessible and placed on the posterior surface, suturing of the ulcer is often not possible, and the best routine procedure is to perform a gastro-enterostomy and allow the adhesions to remain undisturbed without attempting a gastrolysis.

CHRONIC GASTRIC ULCER.—This type of ulcer may exhibit its presence by a return of the usual symptoms some time after the patient has been freed from all pain and discomfort by a prolonged rest cure, in which case it really belongs to the class recognised as the *recurring ulcer*. It is, however, liable to finally pass into the chronic type and become identical with those examples of the disease constantly met with by the physician in which, without any history of an acute attack, the patient has suffered for years from symptoms of gastric ulcer with or without occasional slight attacks of hæmatemesis.

If the rest cure has not been already tried, or if only a short stay in bed has been submitted to, the question arises of whether a prolonged rest in bed with restricted diet should be recommended or immediate resort to operation decided upon. The patient usually settles the problem for himself by accepting the former alternative. In which case it must be insisted upon that a period of less than 12 weeks of absolute rest and dieting is useless, and he should be warned that at the termination of this time an operation may be still necessary.

The treatment to be pursued during the three months of the rest cure is to be upon the same lines as have been described for acute cases. Rectal feeding will, however, be rarely required in these patients, and a larger bulk of the liquid nourishment may be permitted, but this should not exceed 2 oz. of milk per hour for the first week, and double this quantity, or at most 5 oz., should not be exceeded till the end of the first month ; most patients can live upon this latter quantity when at absolute rest ; it works out at about 3 pints of milk consumable during the waking hours. It may, however, be supplemented by strong clear soup, or beef tea at times. Most physicians recommend that minced meat, fish, bread, &c., should be given after a couple of weeks, but the patient should rigorously adhere for at least 2 months to a perfectly fluid diet, or one in which impalpable farinaceous foods like arrowroot, cornflour, or oaten flour are alone used as in the dietary for typhoid fever. The milk should not be peptonised unless under special circumstances. Renneted milk may be used freely and uncooked white of egg with a little chicken soup, and occasionally Benger's food may be given. If the patient does not tire of the smooth or liquid diet it may be prolonged after he is permitted to move about. Olive Oil as an article of diet is sometimes most valuable, and may be freely used in many cases.

Drug treatment is of more importance in the chronic than in the acute type of ulcer owing to the almost constantly present gastric catarrh, and the best routine is the combination of Papain 2 grs. with 30 grs. Bicarbonate of Soda, and an equal amount of Heavy Magnesia and $\frac{1}{20}$ gr. Morphia, given every 6 or 8 hours alternately with a 2 or 3 min. capsule of Creosote 3 or 4 times a day; 5j doses of Bismuth Carbonate are recommended.

Lavage may safely be employed in many cases if a very soft tube be used, though this agent is inadmissible in the acute type of ulcer where spontaneous perforation is more liable to occur than in ulcers with greatly indurated margins as in the condition at present under consideration, but the stomach should never be distended with more than 10 oz. of liquid at a time. Where the patient can induce vomiting by swallowing a $\frac{1}{2}$ to 1 pint of lukewarm water containing a teaspoonful of bicarbonate of soda this method answers all purposes when much catarrh with mucous secretion is present. The addition of Creosote or other antiseptic to the water used for lavage is often beneficial, and Professor Stewart's method of washing out with Nitrate of Silver might be tried.

The pain of chronic ulcer must be carefully investigated; often this remains permanent after complete cicatrization has occurred, in which case it is due to the dragging of adhesions and can usually be differentiated from the pain which is caused by food or hyper-acid secretion coming into contact with the ulcerated surface. Fibrolysin injections should always be resorted to before operation is decided upon in such cases.

When the symptoms continue or, as is much more frequently the case, when they return after the patient resumes an ordinary diet, the case should be pronounced to be one in which an operation is necessary. The danger of complications, as hæmorrhage and perforation, and the liability to a life of chronic invalidism, or to the termination of the affection in cancer being pointed out, the patient usually consents to place himself in the hands of the surgeon.

Operations for Gastric Ulcer.—The exact nature of the operative procedure cannot be decided upon till the stomach is exposed and the actual condition in each case is determined, but the growing tendency amongst all surgeons is to the routine of doing a posterior (no loop) gastro-jejunostomy by von Hacker's method, in which a vertical application of the jejunum to the stomach is effected as described under Gastric Dilatation. Finney's gastro-duodenostomy is less satisfactory.

If the ulcer is small it may be excised or infolded, but even when this is done, *unless the ulcer is on the lesser curvature near to the cardia* the anastomosis operation is still considered necessary to prevent recurrence. In the great majority of cases the ulcer may be left alone, as it soon heals once the food and gastric secretion is diverted into the intestine by the new route.

Mitchell has pointed out the importance of partially occluding the duodenal exit in order to secure patency of the artificial one ; this he accomplishes by a purse-string suture of the pylorus on its proximal side, and he always strips the adherent stomach from the underlying pancreas. The mortality of gastro-enterostomy for chronic ulcer is now reduced below 1 per cent.

The formation of a peptic ulcer in the duodenum or jejunum after gastro-enterostomy is becoming a rare event since the introduction of the perfected methods above described in the performance of the posterior no-loop operation, as insisted upon by Moynihan, Mitchell and others, with partial or complete obliteration of the pyloric orifice so as to keep the new route patent.

Hour-glass contraction of the stomach if found present requires radical operative methods. *Gastroplasty*, or the division of the stricture between the two sacs, is not a successful procedure, as recurrence is liable to follow. *Cylindrical Gastrectomy*, in which end-to-end union is effected, meets many cases.

Gastro-enterostomy often is followed by recurrence. Monprofit and Clément have devised anastomosis operations by means of which each pouch may be drained separately into the jejunum. The best procedure is *Gastro-gastrostomy* ; this consists in making an anastomosis or direct connection between the two pouches by folding over the pyloric pouch upon the gastric one, and then performing a posterior gastro-enterostomy in order to drain both.

Operation for Hæmatemesis.—This if possible should never be attempted when the patient is in an exhausted anæmic condition ; the hæmorrhage usually can be effectually controlled by medical treatment as detailed upon p. 351.

In severe recurring hæmorrhages (*gastrastaxis* or *gastrorrhagia*), as the next attack may prove fatal, a gastro-enterostomy should be performed. When this is decided upon no interference with the bleeding ulcer need be thought of ; as soon as the collapse of the stomach walls has occurred after the operation, if bleeding has been active it stops, and never returns.

In some cases the gastric arteries, the gastro-duodenal and gastro-epiploic have been ligatured successfully and the cautery has been applied to the bleeding spot, but all these measures are unnecessary by resort to the anastomosis operation, which not only meets the hæmorrhagic condition but effectually cures the ulcer.

DUODENAL ULCER.

Once the diagnosis of this complaint has been made from attacks of pain coming on 2 to 4 hours after eating, which is always relieved by taking a small morsel of solid food and which is liable to awake the patient during the night, the recognised line of action is to lose no time in drug or dietetic treatment, but to hand the case over to the surgeon for immediate

operation without waiting for corroboration of the diagnosis by the presence of hæmatemesis or of melæna. Some authorities, however, believe that Antilytic Serum (fresh normal horse serum) when administered by the mouth has an almost specific action. It should always be tried for the relief of hæmorrhage whilst awaiting operative procedures.

Four operations, according to Moynihan, are available :

1. After opening the abdomen the ulcer is searched for, and if found to be very small and situated upon the anterior surface of the duodenum it may be simply *excised*. This is done by making two horizontal incisions, including a narrow elliptical piece of the duodenal wall containing the ulcer ; the lips of the wound thus formed are forcibly retracted so as to convert the horizontal aperture into a vertical slit, in which position it is then sutured. A modification of this operation consists in prolonging the extremity of each end of the horizontal incision so as to reach the stomach and extend towards the second part of the duodenum, after which the large wound is to be dealt with as in Finney's operation.

2. The duodenum may be resected with or without the pyloric portion of the stomach.

3. Resection and end-to-side anastomosis, the pylorus being left intact.

4. *Gastro-enterostomy*.—This is the procedure suitable in the very great majority of all cases of simple duodenal ulcer. The posterior, no-loop, operation with a vertical application of the jejunum to the stomach, gives the most satisfactory results ; the steps of the operation are described under Gastric Dilatation. A. B. Mitchell has shown the necessity of partially occluding the duodenal route by a free infolding of the ulcer, and Moynihan adopts this procedure as a necessary routine in all cases. After all suturing has been completed and dressings applied the patient is placed on his back in bed for a couple of hours, when he should be well propped up and permitted to swallow a small quantity of water, and Moynihan allows a cup of tea after a few hours to be repeated 3 or 4 times during the first 24 hours. Solid food, fish, sweetbread and bread and butter may be permitted in 8 or 10 days, and ordinary diet at the end of the third week.

Moynihan, in his brilliant classic on "Duodenal Ulcer," gives the details of almost 200 cases upon which he has operated, and states that his mortality up to the end of 1909 was 1·6 per cent. for his entire series ; there was no death amongst his last 121 cases operated upon.

PERFORATION OF DUODENAL ULCER.—This must be met by immediate operation, and the perforation being discovered (it is nearly always on the anterior surface of the first portion of the duodenum) it is closed with sutures and the toilet of the peritoneum rigorously dealt with. Flushing may be necessary where there has been great extravasation, and hot saline should be freely used and drainage in most cases is called for.

The question of the necessity of performing a gastro-enterostomy is practically settled by recent experience, as after the suturing of the margins of the perforation the ulcer should always be freely infolded, and this leads to more or less occlusion of the duodenal route. Hence the posterior operation should be performed when possible in all cases as soon as the peritoneum has been thoroughly cleansed. Sometimes the anterior operation may be indicated where expedition is a vital point and the condition of the part determines its suitability. It will be often a wise precaution to wash out the stomach during the operative proceedings.

After the completion of the operation the patient should be propped up in bed by pillows in the sitting posture, and Murphy's method of continuous rectal infusion should be started at once; this relieves thirst and diminishes the risk of septic infection.

The recent results of operation for duodenal perforation in chronic ulcer must be considered as somewhat startling; my colleague A. B. Mitchell has performed the operation with complete success in no less than 17 consecutive cases. He points out that the reflex closure of the pylorus which usually follows perforation of the duodenum limits the amount of extravasation into the abdominal cavity, and hence better results may always be expected than when the stomach has perforated.

In *chronic* perforation the procedure should be upon the same lines. The abdomen being opened the abscess should be incised and free drainage established; a fistula, however, often remains. The pylorus should in these cases be occluded by infolding and a gastro-enterostomy performed.

GENU VALGUM (Knock-Knee).

Both this condition and the opposite one of *Genu Varum*, or *bow-knee*, are nearly always the result of rickets; occasionally they may result in weak, underfed boys by prolonged standing or the carrying of heavy weights which cause the ligaments of the knee-joint to stretch.

The treatment of both affections in the early stages will consist of rest in bed in order to take the weight of the body from off the yielding bones or ligaments. The internal remedies—Cod-Liver Oil, &c.—well regulated dietary, suitable to the rickety condition, are to be persevered with, whilst massage and forcible though painless manipulation of the bones are to be daily practised.

As open-air life is to be maintained as completely as possible a splint may be applied along the limb, reaching from the pelvis to well below the foot, so as to prevent the child from standing. By careful padding of the splint and by the judicious use of an elastic bandage a mild degree of pressure may be continuously kept up in order to straighten the bent bones, and the child can be carried out into the open air. A double Thomas's hip splint

with knee-bars and head-piece is usually very suitable. In poor children where the adjustment of splints becomes an impracticable procedure the leg may be straightened under chloroform and a plaster casing applied to the entire limb.

The knock-knee and bow-knee of adults do not yield to the above treatment ; the splints or irons irrationally applied in these cases cannot act upon the rigid bones, and only tend to stretch the sound ligaments, but Thomas's knock-knee brace is often useful ; operative procedures are essential if the deformity is to be removed.

Osteotomy by removing a wedge-shaped piece of bone from the inner side of the femur permits the long axis of the bones being brought into line. *Macewen's* operation is the most suitable ; he chisels through the femur above the epiphysis for two-thirds of its extent and then breaks the bone across ; the limb is next encased in a plaster of Paris splint after the deformity has been overcorrected and the toes turned in. Where the tibia is the chief seat of the deformity, *Morton's* operation is required ; this consists in the removal of a wedge-shaped piece of bone from the tuberosity. The deformity may often be remedied by merely sawing through the tibia below the epiphysis ; in either case the fibula must be divided or fractured (osteoclasia) if it cannot be bent. In bad cases both the femur, tibia and fibula may all require division. Bow-knee is dealt with upon similar lines.

Bow-legs occur from rickets and may be associated with the two previously mentioned deformities or exist alone. In young children the condition can usually be remedied without operation. Complete rest in the horizontal position in bed is essential. The weight of the body must be taken off the softened bones for a considerable period. Cod-Liver Oil should be administered, the diet carefully supervised, and the nutrition of the body improved in every possible way, while the tone of the muscles is to be assisted by massage and douching. Manipulation of the softened bones may be employed so as to assist in the reduction of the bending. The writer believes that harm may be done by the routine administration of Phosphorus when this remedy is resorted to before the bent bones have been allowed to straighten by rest and manipulation, as they are liable to become hardened in their bent position under the action of the drug.

Bandaging the limbs to suitable splints, selected as sound common sense and surgical or mechanical knowledge may dictate, will bring the deformity back to the normal standard when rest and massage fail. A double-padded splint may be placed between the legs, extending from near the perineum to some inches beyond the soles of the feet. To this splint both legs should be evenly bandaged. It is a good practice to resort to splints, even in mild cases, since their use enables the child to be safely carried or driven out in the open air without the risk of his leaning his weight upon the limbs. Standing should be rendered impossible

by the adjustment of the splints. Massage and douching may be performed at night and in the morning. In severe cases attempts may be made to straighten the limb under chloroform, and in confirmed, long-standing cases osteoclasis or fracture of the bone or osteotomy is the only available procedure.

GLANDERS.

Prophylactic measures are of vital importance in all those brought into contact with horses suffering from the disease or from farcy, which is its chronic cutaneous form. The most scrupulous cleansing and disinfection is essential owing to the highly infectious nature of the acute disease, and no groom should be permitted to tend upon any suspected animal if he is suffering from wounds or abrasions of any kind. These measures are equally imperative in the case of nurses or attendants coming into contact with glanders occurring in the human subject, and the patient should always be rigidly isolated.

The treatment of the acute disease is very unsatisfactory, the great majority of the cases ending fatally; little can be done save to treat the symptoms of fever, prostration and joint pain by rest in bed, generous liquid diet and free stimulation. The site of the entrance of the bacillus, when recognised, should be freely excised or cauterised by the galvano-cautery. All swellings and local collections of pus should be incised at an early stage, and the cavities, after being syringed, may be well mopped out with Sublimate solution or Creosote and cotton-wool on a stout probe.

In chronic cases the same surgical measures must be promptly followed, and when the nose is affected the nasal antiseptic douche containing Carbolic Acid should be continually used and the throat sprayed with the same solution.

Drugs are of little use in the acute type of the disease, but in chronic cases Sulphocarbolates and Benzoate of Soda are valuable and may be given in doses of 30 grs. three times a day. Where there is much prostration, large doses of Ammonia are indicated. Quinine, 5 grs. every four hours, dissolved in 15 mins. of the Tincture of Perchloride of Iron, may be given. Arsenic, Iodides, Carbolic Acid, and Mercurial inunctions have been also employed, sometimes with advantage.

Mallein has been injected in doses of 10 to 15 mins. of the Lister Institute preparation, though some authorities maintain that it should never be used in human glanders or farcy.

Symptoms, as they arise, such as pain, diarrhoea, profuse perspirations, rigors, vomiting, &c., must be met by appropriate remedies. The air of the patient's room should be kept saturated with the vapour of Carbolic Acid, Terebene, or Turpentine.

The most rational and promising treatment is that carried out by Sir A. Wright, who injects a vaccine prepared from cultures made from the local lesions of the patient; this is to be adminis-

tered in such doses and at such intervals as the opsonic indications direct, but notwithstanding most patient treatment by this method it sometimes fails.

GLANDS, Diseases of—See Lymphadenitis and Scrofula.

GLANDULAR FEVER.

The treatment of this acute infectious disorder which occurs as a rule only in children and is never fatal should be carried out on the same lines as are indicated in a mild attack of measles or r  theln. A smart saline should be administered at the start, and as Dawson Williams believes that the causal toxin is probably produced in the intestine this may be repeated at intervals during the first week. A mild diaphoretic mixture should be prescribed as long as the brief fever lasts, and a milk diet administered and the patient isolated in a moderately warm, well-ventilated room. No friction or stimulating application should be made to the enlarged glands, which always spontaneously subside within a fortnight. A warm covering of cotton-wool may be provided for the jaw and cervical glands when these are markedly tender. 4 weeks' isolation will be necessary before the patient is permitted to mix with healthy children.

GLAUCOMA.

The treatment of *Primary* glaucoma—*i.e.*, that form of increased tension in the globe not preceded by any intra-ocular disease—requires prompt measures when occurring in the acute form. *Myotics* and *Iridectomy* are the methods to be resorted to; the choice of these agents will depend upon the special indications present, but as a rule removal of a portion of the iris must be effected if a permanent result is to be obtained. Eserine should be instilled immediately as soon as the first symptoms of the disease exhibit themselves; the solution should not be stronger than 2 grs. to 1 oz. Posey recommends that as a strong solution of Eserine may cause spasm of the ciliary muscle Pilocarpine should be at first employed, but this is of more importance in chronic attacks, since time is of vital importance in the acute type of the affection in order to prevent total blindness from retinal destruction. The instillation should be repeated 3 or 4 times within the first hour, and at longer intervals afterwards. A strong Saline purgative should be administered, and the local tension may be lessened by leeching, but all these measures must be regarded as mere palliatives and should only be resorted to as preliminary procedures to preserve the integrity of the eye while awaiting the necessary arrangements for the performance of an iridectomy. Even should the attack appear to pass off the operation should be carried out, as recurrence is almost certain to supervene and the vision may be completely destroyed before aid can be again obtained.

The incision should be made as far back in the cornea-sclerotic margin as possible, and Swanzy insists that at least one-fifth of the circumference of the iris should be removed as close to the root as possible, and that the aqueous humour be permitted to flow away very gradually in order to avoid intra-ocular hæmorrhage from the suddenly reduced pressure. If the operation should by any means fail to reduce the tension, posterior sclerotomy must be resorted to in order to restore the anterior chamber and permit the lens to resume its normal position. Henderson explains the efficacy of iridectomy upon the theory that the aqueous humour escapes into the stroma of the iris through the incised lips of the wound made in it, as no cicatrization occurs in them. In rare intractable cases Lagrange's combined iridectomy and sclerotomy operation which establishes a subconjunctival fistula may be resorted to, and Herbert's modification of iridectomy is planned upon similar lines to secure continuous escape of a small quantity of the aqueous humour into the lymph spaces of the episcleral tissue.

Subacute or chronic primary glaucoma is to be treated upon similar lines. In many cases the tension may be kept normal by the continual use of Eserine, but the instillation must be kept up during the remainder of the patient's life, and often irritation of the conjunctiva becomes unbearable. The dietary and alimentary canal will require close supervision, every agent tending to produce increase in the general blood-pressure must be neutralised. Maddox recommends periodical manipulation of the eyeball. As a rule it is wiser to perform iridectomy and thus forestall a severe acute attack, but the excellent effect as regards gain or restoration of sight which follows the operation for acute glaucoma is not to be expected in the chronic form, since in these cases the vision is always more or less permanently damaged.

In chronic gouty glaucoma success often follows the medical treatment of the primary disorder without resorting to operation.

The operation of removal of the superior ganglion of the sympathetic has been many times performed for chronic glaucoma, but not always with success. Many surgeons advocate a simple sclerotomy to evacuate the aqueous without removing any iris.

Congenital hydrophthalmos or as it is also called cornea globosa and buphthalmos, when the tension becomes greatly increased in the distended globe is best treated by Eserine instillations; operative procedures are contra-indicated as a rule.

Secondary glaucoma—*i.e.*, that form which supervenes upon previous diseased conditions of the structures of the eye—will require treatment modified in each case by the old intra-ocular disorder. Thus when due to complete annular adhesions between the iris and the anterior capsule of the lens (posterior synechia) an iridectomy should be done. Injury, displacement or dislocation of the lens causing glaucoma will demand removal of the lens from the eye in order to restore or open up the angle of the

anterior chamber. Dislocation of the lens into the vitreous will demand an iridectomy if the symptoms do not yield to eserine instillation. Deep corneal wounds and ulcers involving the iris in their cicatrices must be treated by removal of a large portion of the iris. When the exudation is extensive in an acute iritis which blocks the normal circulation of the intra-ocular fluids, though no adhesions exist, the contents of the anterior chamber must be removed by paracentesis.

Where the sight is totally lost and the glaucomatous eye is painful and tender, though iridectomy has been already performed, the only procedure is enucleation.

Hæmorrhagic glaucoma is always grave: a strong Saline purge should be given immediately, and small doses of nitroglycerin to reduce the general blood-pressure, and Eserine should be instilled. Paracentesis is the best routine procedure, the aqueous being removed as slowly as possible. Iridectomy must be avoided, as the sudden withdrawal of fluid is certain to increase the hæmorrhage, unless in cases of primary hæmorrhagic glaucoma after Eserine, Purgation and Leeching have gradually reduced the tension. Enucleation of the eyeball will often be necessary.

It should always be remembered that atropine must never be employed in the glaucomatous condition, owing to its dangerous power of increasing the intra-ocular tension. Its instillation with the view of breaking down adhesions in synechia may determine an attack of acute glaucoma in elderly subjects.

GLEET.

The treatment of gleet is that of the late stages of gonorrhœa, to which it is practically always the sequel. In very chronic cases the ordinary internal antigonorrhœal remedies are worthless, and the condition is liable to become intractable, taxing the resources of the surgeon and the patience of the sufferer to the utmost, not infrequently the patient becoming hypochondriacal or neurasthenic, developing a troublesome neurosis which may demand active treatment.

The physical condition of the patient should be improved in every way possible, and complications such as constipation, anæmia, dyspepsia and oxaluria should be corrected by appropriate remedies. Stimulants, excessive smoking, sexual intercourse, over-eating and indulgence in articles of food which experience has proved to aggravate or be the cause of the prolongation of the disease as strong tea, pickles, beer, &c., must be strictly prohibited. Excessive fatigue is as injurious as spending too much time in bed. Sea-bathing, when the season permits, or cold baths indoors, and moderate open-air exercise are beneficial in all cases.

Tonics, consisting of full doses of Tincture of Iron (15 mins.), with 3 grs. of Quinine or teaspoonful doses of Easton's Syrup, often do good.

The local treatment of gleet is by far the most important, and the number of remedies is almost endless. Every known astringent and antiseptic has been injected down the urethral canal for the cure of this disorder. Where the gonococcus is found in the discharge the organic Silver Salts afford the best chance of successful treatment, but in the majority of chronic cases the examination of the slight mucoid discharge always gives negative results.

Whether the gleet is due to a chronic inflammation of either the anterior or posterior urethra the best routine treatment to start with is the passage of a solid metallic bougie with a wide curve. Thompson's old-fashioned tapering, solid, heavy bougies are, in the writer's opinion, the best instruments for general use. One of them, well lubricated, should be permitted to glide into the bladder by its own weight. The size selected should be of the full diameter of the urethra; it should be left *in situ* for a period of a few minutes at first, and this period should be gradually lengthened at subsequent sittings and a larger instrument employed each time till No. 15 (English) is reached. Any lubricant may be used; the writer uses the B.P. Glycerin of Borax. Many cases of gleet will be found to yield to this treatment if carried out for some weeks. Twice a week will be about the best rule for guidance as regards the frequency of the sittings.

The advantage of this treatment lies in its freedom from danger when contrasted with the injections of strong astringent solutions, and it effectually remedies any stricture or narrowing of the urethra which is found so frequently associated with gleet, and it will prevent a stricture forming afterwards. The urethrometer may be employed for the same purpose. By its use any portion of the canal can be dilated, after which a silver or other solution may be injected so as to deeply infiltrate the stretched tissue.

Any antiseptic may be smeared upon the bougie if made into a stiff ointment. Special grooved instruments are made for the application of solid ointments, but these are unnecessary as, owing to the adhesive nature of lanoline, any substance incorporated with it will adhere to the end or curve of the ordinary bougie, and may be carried down and left in contact with the diseased area. Iodoform (30 grs.), mixed intimately with 1 oz. ointment of Hazeline, is a valuable lubricant. Carbolic Acid, Resorcin, or Nitrate of Silver (5 grs. to 1 oz.) may be used in this way.

The antiseptic drug may be incorporated with a firmer basis, and made into bougies, which can be passed down the urethra and left to melt by the heat of the body. Unna's bougies contain (1 in 100) Nitrate of Silver, and are made with cacao butter and a little wax and Peruvian balsam. Antrophores are specially prepared bougies, consisting of Sulphate of Thallin (2 to 6 per cent.).

The endoscope should be passed after cocainisation when the

disease fails to respond to the use of these remedies, and the urethra examined for its entire extent. Any local lesion that is detected can then be directly treated by the application of a strong solution (5 per cent. Nitrate of Silver) to the affected spot.

Guyon's method of instillation of the posterior urethra is often highly efficacious; a soft rubber catheter being introduced as far as the apex of the prostate, a syringe is attached and 15 to 30 mins. of the fluid slowly injected into the prostatic portion of the urethra. The best solution is one of Nitrate of Silver, which at first should be employed in the strength of $\frac{1}{2}$ per cent. This may gradually be increased to 2 per cent. as long as pain and smarting are not induced. Strong solutions at first only increase the mischief, but 5 per cent. Copper Sulphate, $\frac{1}{4}$ gr. Permanganate of Potash to each ounce may be employed when the silver salt is not well borne. The prostate should be massaged from the rectum in order to clear out the secretion from the follicles before instilling.

Otis first dilates gently the urethra to its full extent without using force, then a silk *coudé* catheter is introduced just beyond the compressor urethræ muscle, so that the eye lies in the neck of the bladder, then about 8 oz. of fluid injection is introduced into the bladder by a syringe. The catheter is then withdrawn, and the patient flushes out the urethra by emptying the bladder voluntarily.

He commences the treatment by using an injection consisting of 1 part each of Sulphate of Zinc, Alum and Carbolic Acid in 2,000 parts. Upon the second day the water is reduced to 1,500, and upon the third to 1,000, and upon the fourth day to 500 parts (1 gr. to 1 oz. nearly). Upon the fifth day solution of Permanganate of Potassium (1 in 2,000) is used, upon the sixth 1 in 1,500, upon the seventh 1 in 1,000. Afterwards the solution is changed to one of Nitrate of Silver (1 in 1,000) gradually increased to 1 in 100.

Should the injections fail, a few drops of a 5 per cent. Nitrate of Silver solution are passed into the deep urethra by the drop-syringe, and when the disease still resists he performs internal urethrotomy.

Melun recommends ionisation of Silver and P. C. Fenwick of Zinc. The urethra being filled with silver nitrate or zinc sulphate solution the negative pole of a galvanic battery is applied to the spine and the positive to a metal instrument left in the urethra. A weak current is turned on for 15 to 25 minutes; the silver or zinc ions, being permitted to penetrate deeply into the diseased tissue, cause practically no pain.

Much benefit may often be obtained by periodical massage of the prostate through the rectum, and cure has followed the use of the X rays.

Vaccine treatment has been successfully employed in many intractable cases, a vaccine being prepared by using several

strains of gonococcus when the coccus cannot be obtained from the patient's discharge. Small doses (1 to 10 millions) frequently repeated are usually sufficient. Where the infection is of mixed nature Polyvalent Antistreptococcus serum has been used.

The different injections which may be employed as a routine in the late stages of gonorrhœa before the above-mentioned methods of treatment are resorted to for an established gleet will be found in the article on Gonorrhœa.

GLÉNARD'S DISEASE.

This condition, which is characterised by the descent of the liver, kidney, stomach and colon due to relaxation of their ligaments, loss of tone in the abdominal muscles, absence of fat, tight lacing, &c., is also known as "Splanchnoptosis," "Enteroptosis," and "Visceroptosis." When only one organ is obviously displaced, such terms as "hepatoptosis," "nephroptosis," "gastroptosis," are employed, but the term "Glénard's Disease" should in strictness only be applied to the condition in which all the organs in the upper zone of the abdomen are displaced.

The treatment of this condition is most difficult and often disappointing, a most inveterate neurosis becoming developed which renders the patient's life unbearable, and which may remain with all its paraphernalia of neurotic symptoms unrelieved even after the displaced organs have been fastened in their normal position by surgical methods.

In recent cases produced by prolonged physical strain accompanied by acute emaciation such as may sometimes be noticed after the tedious nursing of a relative during a fatal illness, the condition, if detected at once, may be effectually remedied by ordering the patient at once to bed and insisting upon a long period of absolute rest, with over-feeding and massage and such attention to the general nutrition as will restore the paddings of fat within the abdomen and improve the tone of the abdominal muscles.

Tight lacing and the weight of heavy garments whose fixed point is at the compressed waist must in all cases be remedied. Skirts and petticoats should be suspended from the shoulders, and constipation which causes dragging on the colon should be guarded against by laxatives and occasional saline purges. The feeding should be liberal, but regulated by such short intervals as will effectually prevent the stomach being at any time so weighted with food as to facilitate its descent in the abdomen. The patient should sleep with the shoulders depressed and the foot of the bed raised so as to diminish the tendency towards displacement.

During the waking hours an abdominal belt, binder or corset should be worn with suitable padding to keep the viscera supported. The styles or patterns of these are endless. The best support is one which will distribute the pressure in an upward

direction in such a manner as the patient instinctively adopts by placing both hands upon the lower part of the abdomen to relieve the dragging sensations experienced whilst standing in the upright posture. If such an appliance be adjusted in the Trendelenburg position an amelioration of all the symptoms may be often satisfactorily obtained in mild cases of the affection.

In serious examples of general ptosis, and even when only one organ, as the kidney, is displaced, the neurotic condition will require thorough treatment and the Weir-Mitchell method may be necessary.

When the ptosis of any individual organ is seriously interfering with its functions recourse must be had to surgical procedures.

HEPATOPTOSIS.—This in all its degrees of severity, from slight displacement downwards to the type known as movable and floating liver, may be the cause of gall-stones with repeated attacks of pain and jaundice, in which case the secondary troubles will require operative relief. Hepatopexy should also be performed after the removal of the calculi, and sometimes it is clearly indicated where there is no evidence of cholelithiasis when the dragging pain is not relievably by a binder. An incision is made along the lower costal margin on the right side, with the patient in the Trendelenburg position. The lower edge of the right lobe of the liver is then to be carefully stitched with catgut sutures to the upper margin of the wound made in the parietal peritoneum after this has been folded over to the hepatic edge the patient being kept in bed for 4 or 5 weeks with the shoulders depressed and the feet elevated slightly by tilting the foot of the bedstead.

GASTROPTOSIS.—Where this fails to yield to a carefully adjusted binder signs of gastric dilatation soon show themselves from kinking at the pylorus, and operative procedure is to be weighed against the relief obtainable by resort to the stomach-tube and lavage at regular intervals. As a rule it is wiser to adhere to the employment of the rubber tube, as the neurotic symptoms are often permanent even when a gastro-enterostomy has been successfully performed. The operation of gastropexy has been carried out by Beyea by elevating the stomach to its normal position through shortening the gastro-hepatic omentum and the gastrophrenic ligament with sutures.

A series of tucks or reefs may be made in the anterior wall of the stomach by a row of interrupted sutures, the operation being known as "gastrorrhaphy" or "gastroplication," as described under Gastric Dilatation.

NEPHROPTOSIS.—This is often a part of the so-called Glénard's disease, but though caused by the same factors it often exists alone or preponderates over the other displacements. The organ may only be found to slightly descend with the diaphragm on deep inspiration. Its entire bulk may be palpated below the costal arch on the patient taking a full breath, or it may be freely

movable or even floating at all times. The symptoms, however, bear no proportion to the degree of motility.

In all cases an attempt should be made to keep the organ in its normal position by a properly adjusted binder or corset applied when the patient is in the lying position with the pelvis raised, a movable diamond-shaped pad or small air-cushion being inserted inside the support with the acute apices of the pad lying across the abdomen. Garland maintains that not more than 1 per cent. of the cases of displaced kidney require operation, and he has devised a rational corset which seems to meet the requirements of the condition better than any hitherto employed. It will be found figured and described in an admirable article by Hurry Fenwick in the *Medical Annual* for 1910.

As regards operative procedures, it may be safely said that these should always be avoided in marked neurasthenic patients where the renal functions are not really interfered with, as the operation of fastening the kidney has been abundantly proved to fail in relieving the profound neurotic symptoms present before the operation. It appears almost equally clear that when operation is undertaken for the relief of kidney symptoms where the condition is part of a general ptosis of the organs in the upper zone of the abdomen, mere fixation of the kidney will prove a failure if the other organs are not at the same time stitched in their normal positions.

Operation is, on the other hand, clearly indicated after the failure of the abdominal support when the ureter or pedicle becomes twisted or kinked, causing Dietl's crisis and hydro-nephrosis or producing dragging upon the bile-ducts or duodenum.

Nephropexy, nephrorrhaphy, or fixation of the kidney may be effected by the posterior or extraperitoneal route through an oblique lumbar incision. The kidney being exposed, its fat is stripped off and the organ carefully examined for evidence of gross disease or calculi. Some surgeons, in order to be certain of its integrity, advise that it be slit open (nephrotomy), and sutured afterwards if found to be sound. The capsule is to be split by a crucial incision, and the segments reflected backwards to the hilum. These are then sutured to the posterior abdominal wall, the upper ones being stitched to the muscle attached to the last rib and the lower ones sutured to the aponeurosis of the posterior wall, so as to form a shelf upon which the organ may rest by utilising the parietal peritoneum and both layers of the perirenal fascia.

The operation has been modified in various ways. McLaurin produces the shelf by simply suturing Zuckerkandl's fascia and the peritoneum to the fascia on the front of the quadratus lumborum muscle, and closes the wound up without gauze packing or drainage.

Fullerton has ingeniously devised the simple operation of sus-

pending the kidney by a piece of its capsule attached to the ligamentum arcuatum externum, and reports excellent results.

An anterior operation has been recently devised by Harlan and Bishop, and carried out by Cheyne in the following manner: The organ being reached from the front by an incision made below the edge of the ribs, the peritoneum on being pushed to the middle line exposes the posterior surface of the kidney with its surrounding tissue. This latter structure is divided and the fat removed, and the capsule is incised on its posterior surface and reflected backwards from the outer and lower areas. These flaps are finally attached to the muscles behind the organ, one wing supporting the lower end and the other the outer convex portion of the kidney. It is claimed for the anterior operation that it permits of greater freedom in fixing the displaced kidney in its normal position.

The kidney, if found diseased, must be removed (nephrectomy) should previous examination by the cystoscope have demonstrated the integrity of its fellow.

The attacks known as Dietl's crises caused by twisting of the renal pedicle may be often relieved by inverting the patient or raising the lower extremities and pelvis by elevating the foot of the bed to a considerable height. In a similar manner the gastric crises may often be temporarily relieved when the duodenum has become kinked.

ENTEROPTOSIS.—Employing this term for the moment only to those cases where the main and most obvious trouble is due to prolapse of the transverse colon, the V-shaped loop extending into the pelvis, much may be done by rest and the application of a corset and systematic purgation. The writer has observed that in such cases lavage of the stomach is sometimes followed by the emptying of an enormously distended colon which has resisted enemata. The lavage evidently excites a very pronounced contraction of the walls of the whole of the displaced colon.

For the chronic constipation in this type of ptosis, which may amount to intestinal obstruction, little may be expected from any attempt to keep the displaced colon in the normal position by suturing or stitching. Arbuthnot Lane has carried out successfully the heroic procedure of excising the entire colon. The first step in the operation is to perform ileosigmoidostomy by dividing the small intestine above the ileocaecal valve and making a lateral anastomosis by joining the proximal end of the small intestine to the lower part of the sigmoid, and leaving the colon in the abdomen with the distal end obliterated by sutures. Sometimes this preliminary is sufficient, but there is always the danger of some faeces finding their way upwards into the useless colon, in which case after several weeks a second operation is carried out which consists in the removal of the whole of the large intestine above the juncture at the sigmoid.

GLOSSITIS.

In acute inflammation of the tongue caused by streptococci finding their way into the parenchyma of the organ, great œdema threatening suffocation may rapidly supervene. The only safe course to pursue in such cases is to make one or more free and deep incisions on each side of the middle line, cutting from behind forwards. The patient should then continuously wash the mouth with Carbolic Acid (1 in 100), Boric Acid (4 per cent.), Chlorate of Potash (3 per cent.), or Permanganate of Potash (1 in 1,000). Relief may be obtained by hot poultices applied round the jaws and upper part of the neck, and the patient may hold his head over a basin of boiling water with a sheet thrown over him when there is any difficulty in swallowing or breathing.

Croton Oil or a strong Saline purge should be administered. Where pus has already formed, no time should be lost in making a free linear incision to evacuate the contents of the abscess.

The glossitis which follows mercurial or iodine salivation usually yields speedily on the withdrawal of the drug, and the use of an antiseptic lotion, of which Chlorate of Potash is the best.

True syphilitic glossitis, when not showing itself as a gumma or a series of ulcers or fissures, is of the sclerotic type, and should be treated constitutionally, as well as locally by Heath's method of pickling the tongue in Mercurial Solution. He uses $\frac{1}{4}$ gr. of the Bichloride dissolved in 1 oz. water, and makes the patient hold this in his mouth for 10 minutes by the watch three times a day, breathing through his nose all the time.

The treatment of Leucoplakia, which is usually classed as a chronic superficial dermatitis, will be detailed under its own subheading in the article on Tongue Diseases.

GLYCOSURIA—see Diabetes.

GOITRE OR BRONCHOCELE.

The treatment of a common form of this affection, endemic goitre, is satisfactorily carried out by the simple procedure of removing the patient from the goitrous district in the early stage of the disease when the thyroid swelling will soon begin to diminish rapidly. The chief source of mischief is certainly the drinking water, but it is not the only source; boiling and filtering the water minimises but does not remove the condition, hence even a change of the water supply is deemed insufficient as long as the person resides in the infected district. McCarrison states that the goitre so common in Gilgit in Kashmir is readily cured in the same manner by removing the patient from the district, but believing that the disease is due to infection of the alimentary canal by micro-organisms he has removed the goitre in 25 cases by the administration of Thymol in cachets; 30 grs. are given at the start in the morning and followed up by a purge the same

evening ; 10 grs. night and morning are given for several days afterwards till the swelling disappears.

Iodine in some form internally, notably as the Syrup of the Iodide of Iron, has long enjoyed a reputation as a goitre cure, and Arsenic may advantageously be combined with Iodide of Sodium ; Hydrofluoric Acid, 20 mins. $\frac{1}{5}$ per cent. solution, is likewise valuable. Large doses of Phosphate of Soda were extolled by Zakzewski.

Thyroid Extract has a very decided curative action in many cases, and is now often administered as a routine by many surgeons, but it has no influence over fibrous goitres, though usually the parenchymatous variety of growth yields rapidly to a $2\frac{1}{2}$ gr. tablet twice a day. (Should there be signs of Graves's disease present this remedy is very dangerous.) Kocher believes that the best internal remedy is free Phosphorus, and that not more than 10 per cent. of cases require surgical treatment.

Local treatment may be tried in many forms, the most innocent of which is the daily application of a mixture of equal parts of the Liniment and Tincture of Iodine. If a decided counter-irritant action is desired, the undiluted liniment may be painted on, layer after layer, till vesication is produced.

Iodine ointment may be used instead of the liquid preparation. Some surgeons have found better results from the application of a weak solution applied with the view of effecting absorption of the iodine. In this case half tincture and half glycerin or weak spirit may be employed, the object being not to injure or destroy the cuticle. Ointments of Iodides of Ammonium, Cadmium, and Lead have been used (1 dr. to 1 oz.) they possess no special advantages over the pure iodine.

Binioidide of Mercury is most successful in India, but has been of little use in this country. The Indian practice is to rub in for ten minutes an ointment consisting of 3 drs. of the binioidide to 1 pound lard. The patient is afterwards to sit with his goitre exposed to the direct rays of the sun till he is unable to bear the smarting. After this some more ointment is gently applied, the patient is sent home, and the case seldom requires further treatment.

The injection of solution of Iodine was used with much success by Morell Mackenzie in solid bronchoceles, but the practice has been abandoned owing to the danger of sudden death from the injection entering a vein, and the same remark applies to the injection of Iodoform, Osmic Acid, &c. In cystic cases this danger is less but the injections are valueless. Electrolysis has proved valuable in the hands of Duncan in some cases.

Operative procedures are indicated when the tumour presses upon the trachea, and it is a well-recognised fact that the danger of suffocation bears no proportion to the size of the tumour, the most serious symptoms often being present in small goitres which extend downwards behind the sternal notch. Dysphagia

is a clear indication for operation and should arouse suspicion of malignancy, and the same may be said where pain is a prominent symptom. In some cases operation is undertaken for the relief of the deformity occasioned by the size of the tumour, especially when it is steadily increasing in size in spite of medical treatment.

Various operations have been devised and carried out according to the local conditions present ; the entire gland should never be removed except in malignant cases.

Section of the Isthmus.—This has been performed for the relief of urgent dyspnœa, a free incision or a resection of a portion of the isthmus on each side of the middle line permitting the relief of the lateral compression of the trachea. Sometimes the entire isthmus requires removal.

Thyroidectomy usually means removal of one lateral half of the gland with or without the isthmus as instituted by Kocher. There is some danger in giving chloroform or ether in these cases, and many surgeons recommend that the operation be carried out under local anæsthesia, but this is sometimes impracticable, but the anæsthesia must be light. A transverse curved incision is made over the most prominent part of the tumour and prolonged over the sterno-mastoid, or if only a portion of one lateral half is to be removed the incision may be made along the anterior border of the sterno-mastoid. The muscles depressing the hyoid bone are cut high up or retracted, and the capsule of the gland exposed and divided without injuring the underlying large veins ; the lobe is next carefully enucleated by the finger and the internal jugular vein guarded. The superior and inferior thyroid arteries are ligatured, and the recurrent laryngeal nerve avoided by leaving behind a piece of the lower end of the lobe under which the nerve runs close to the trachea, and finally the isthmus is divided ; the capsule is eventually sutured and the wound treated in the ordinary way, a small drain being left in ; this latter precaution is to prevent acute thyroidism, which is liable to supervene from the absorption of the internal secretion of the gland squeezed out during the enucleation process. The parathyroids which lie behind the lateral lobes close to the trachea with the inferior thyroid artery and recurrent nerve should be avoided, otherwise a fatal *tetany* may supervene soon after the operation. Where the tumour forming a goitre is encapsuled, (this constitutes the majority of them) the capsule consists of a thinned-out layer of the gland substance, which should be divided and the enucleation effected from the inside of this. The parenchymatous or adenoparenchymatous forms are not encapsuled, and Berry insists that these should be treated by *resection-extirpation*, the knife being boldly carried through the entire gland structure, leaving behind only the portion of the lobes where the recurrent nerves lie. Thyroidectomy has a mortality of less than 1 per cent. if performed before serious dyspnœa has supervened, and with some operators it has fallen to almost nil.

The treatment of cystic goitre by tapping, injecting irritants, &c., has given way to enucleation, which may be easily effected even in large cysts by freely incising the gland tissue down to the cyst wall, which is then divided so as to permit all its contents to escape, after which the cyst wall can be peeled off the surrounding gland substance; small cysts can usually be easily enucleated entire. Sometimes a free incision into the cyst wall where this could not be removed has proved successful when the margins of the wound have been sutured to the skin incision and the cavity plugged with antiseptic gauze. Should the entire gland require removal as in malignant cases, myxœdema is certain to follow; this must be treated by thyroid feeding. Tetany has been successfully met by the injection of parathyroid emulsion.

GOITRE, EXOPHTHALMIC.

Rest in bed should be insisted upon in all cases where the disease has become established and where the pulse-rate is above 90. The medical treatment of this grave affection is still mainly symptomatic, and the list of drugs vaunted from time to time is sufficiently long to prove the futility of most if not of all of them.

The diet is of importance; nearly all authorities agree that the less solid animal food ingested the better; a milk diet with vegetable soups answers most requirements; fresh vegetables and fruits should be freely used with bread and butter and farinaceous food. Tea, tobacco and alcohol are injurious; Koumiss is an excellent routine. Ebstein insists upon the part which constipation plays in causing the disease, and he reports cases cured by attention to the state of the bowels.

Ice or Leiter's tubes applied continuously over the pulsating gland may occasionally be found to reduce the heart's rapidity and other symptoms for several hours at a time. The X rays act in a similar way as a palliative, but their good effect rapidly passes off, and therefore as the applications cannot be continuous it need not be tried at all.

Galvanism is, on the other hand, much more lasting in its effects, and the writer has often obtained valuable results in mild cases and sometimes in severe ones by the use of the weak continuous current with one pole over the thyroid and the other over the spine; the sympathetic should also be galvanised and a still weaker 5 cells (Léclanché) current sent through the brain by placing one electrode upon the closed eyelid over several layers of wetted lint and the other pole over the occiput. This treatment may be employed for 15 to 20 minutes daily at first and afterwards every 2 or 3 days for 30 minutes or more at a time; Charcot alternated the continuous with the Faradic current. There is generally a remarkable loss of cutaneous resistance and the electrodes must be thickly padded with warm saline solution.

Fresh or open air life is always beneficial, and the patient

should spend as much time outdoors on a couch as possible, and the windows should be always kept open in the sleeping apartment. High altitude is also decidedly beneficial, and hydropathy, when carefully employed by tepid douches to the spine and cold affusions to the neck, is always worth trying, but if it fails in reducing the heart rate it should be stopped.

As for the drugs employed in the treatment, the task of enumeration is an endless one. The writer's routine is *Strophanthus* alternating in monthly courses with *Digitalis*, and he believes better results are thereby attainable than from any other internal remedy. 10 mins. tincture of *strophanthus* and 15 mins. tincture of *digitalis* thrice daily should not be exceeded. *Sparteine*, $\frac{1}{3}$ gr. may be given 4 times a day in the interval of a week whilst changing from one course to the other.

Belladonna is vaunted ; it seldom does good and may do serious harm by raising the already high pulse-rate. Iodine, Iodipin, or Iodides are much used ; the gross results are perplexing ; apparently the drugs sometimes increase the intensity of the symptoms, and in a few cases they seem to seriously aggravate the disease just as thyroid extract always does, and hence it never should be administered.

Bromides, on the other hand, very seldom if ever do harm, and often the symptoms may be ameliorated by full doses, which, moreover, combat insomnia and restlessness. Bromide of Soda may be combined with the *strophanthus* and *digitalis* treatment. Arsenic occasionally is beneficial. Jackson and Mead, from large experience, speak highly of neutral Quinine Hydrobromide in 5-gr. doses thrice daily for long periods. Quite a number of authorities extol Phosphate of Soda, which apparently is harmless when it fails to alleviate ; but the writer has never tried it. Some physicians place their faith in intestinal asepsis, and recommend Naphthaline, Benzoates and other intestinal disinfectants from which the writer has never seen any benefit.

Kocher extols free Phosphorus in small doses, and certainly this agent is worth trying when cardiac tonics fail, as they often do.

Serum Therapy.—This, upon the theory that the function of the thyroid is to neutralise toxic metabolic products, has been much extolled of late. The serum of thyroidectomised sheep or goats and the milk from the latter have been used. Moebius's Antithyroid serum prepared by bleeding animals whose thyroids have been removed 6 to 8 weeks previously is believed to contain toxins which counteract the excessive human secretion. Merck's tablets correspond to 8-min. doses of this serum ; they are given by the mouth in doses of 4 to 8 daily, 54 tablets being administered during 8 days. Some authorities advise the serum (15-min. doses) should be given hypodermically every second day. In one case the writer tried this treatment without the slightest visible result, but many authorities report favourably of it, as is always

the case with new remedies. Rodagen, a white powder obtained by evaporating the milk of thyroidectomised goats, which is then mixed with an equal weight of lactose, may be given in daily quantities of 2 to 8 drs., and Thyroidectin, the dried blood of similarly prepared animals, is given in 5-gr. capsules. The objection to these new preparations independent of their uncertainty is their great expensiveness.

Operative Treatment.—This is being practiced with greater frequency on the Continent than at home, and the results in the hands of some surgeons are very satisfactory whilst others are much less encouraging. The real value of operation, therefore, still remains to be demonstrated, but it is probable that present methods have reduced the death-rate of the disease by one-half. The first point which still requires settlement is the serious one of anæsthesia; many operators urge that local anæsthesia must invariably be resorted to. Dunhill states that he has operated on 88 cases under local anæsthesia with 1 death, whilst he is cognisant of 54 deaths in patients operated upon under chloroform anæsthesia during 1909. C. H. Mayo states that he has operated on 405 cases of marked hyperthyroidism under ether preceded by atropine and morphia, with 19 deaths. In three-fourths of these one lobe was extirpated, and the great majority of them received 40 oz. Saline solution slowly by the rectum immediately after the operation. Crile believes that many deaths are due to excitement, and he urges the necessity of the patient being anæsthetised without his knowing that an operation is about to be performed, the gland being as he puts it "stolen away."

With these very contradictory views and statistics it is obvious that there is little in the question of local *versus* general anæsthesia. The danger of the absorption of a large amount of the fluid thyroid secretion after this has been squeezed out of the gland during the operation seems to the writer a much more serious factor in the mortality than the mere question of the form of anæsthesia, hence the great importance of drainage and frequent mopping during the stages of the operation. A long rest previous to operation is also a most important matter. Spencer and Gask recommend as the safest operative procedure division or excision of the isthmus with ligature of both superior thyroid arteries, and after a temporary improvement has occurred a partial excision of the gland may be more safely accomplished. Most operators proceed at once to remove one lobe of the gland as in ordinary simple goitre. Crile's latest technique appears to be an admirable one; he ligatures the vessels at the four poles of the gland before cutting away the gland tissue and leaves a portion of each lobe behind, after which the cut surfaces are sponged with almost boiling water to destroy the oozing secretion and check bleeding.

The operation of excision of the cervical sympathetic ganglia

has been practically abandoned since thyroidectomy has been so frequently successful. It must be remembered though surgeons have brought down the mortality of the operation to a very low figure in a still considerable percentage of cases the symptoms are only ameliorated, and in a few no improvement follows, though the majority remain permanently cured. The proportion of cases successfully treated by simple ligature of the arteries without removal of gland substance is a very small one.

GONORRHŒA.

Abortive treatment can only be considered as possible when the patient is seen within 48 hours after the appearance of the first symptoms of the disease—*i.e.*, within a week after the infective coitus, or earlier. At this stage there is slight scalding or itching about the meatus, and a faint sticky but not obviously purulent discharge. Several plans are recommended : the simplest is to inject into the urethra a weak Cocaine solution after grasping the penis in front of the scrotum in order to insure that the gonococci will not be washed backwards into the posterior urethra. In five minutes afterwards 4 drs. of a solution of 10 grs. to 1 oz. Nitrate of Silver, or a 15 per cent. Protargol solution, should be injected after firmly grasping the penis for 2 or 3 inches beyond the meatus, after which the patient should lie up in bed for a day or two, and the operation repeated once on the third day. Another plan which is less irritating and equally efficacious is to thoroughly irrigate the anterior urethra by a $\frac{1}{2}$ gr. to 1 oz. Permanganate of Potassium solution, repeating the operation several times at intervals of 12 hours, the urethra being blocked by an elastic ligature or by the pressure of the finger and thumb in front of the scrotum. It is needless to say that these procedures must be carried out by the surgeon, and never entrusted to the patient. The plan of introducing the urethroscope and directly applying Protargol, Nitrate of Silver or Perchloride of Mercury solutions is painful and not more efficacious.

For the established disease with its profuse purulent discharge the patient should be advised to take to bed when possible. A smart Saline Purge should be administered and the testicles supported by a suspensory bandage. The diet should be as fluid as possible, diluent drinks being freely administered in order to thoroughly flush out the urethra by frequent micturitions. Milk diet answers this purpose admirably ; tea, coffee and alcohol should be forbidden. If the patient is a smoker there is no objection to his mild indulgence in tobacco. A simple diuretic mixture should be given every 2 or 3 hours ; Salicylate of Soda in Camphor water with Mindererus spirit is a good routine in all severe cases.

Should there be much smarting in passing water an alkaline water like Vichy may be freely administered, or an effervescing mixture consisting of 1 dr. Bicarbonate of Potash in 2 oz. water

may be prescribed, with $\frac{1}{2}$ oz. fresh lemon-juice, and Barley water given between each dose in copious draughts. This treatment secures alkalinity of the urine.

As regards the use of drugs intended to disinfect the urethra on their elimination by the urine, these should not be administered in the very acute stage; the proper period for their exhibition is when the profuse discharge begins to show signs of diminishing. Santal Oil, Copaiba and Cubebs are the most reliable; they are much less used than formerly, since the disease is now treated for the most part locally. Nevertheless these drugs are of great value in practice where the patient cannot be relied upon to use injections skilfully, and where irrigation of the urethra by the surgeon is not available; in intractable cases they afford a valuable addition to local treatment.

Oil of Sandal Wood is the least irritating of these, and as a rule its administration may be commenced earlier than that of copaiba; it should be given in 15-min. capsules 3 times a day. Santalol or Arhéol, which is the active ingredient of the oil, may be given in 5-min. capsules. A number of allied substances as Santyl, Camphosan, Thyresol and Allosan, are in use. Copaiba in 15-min. capsules is more reliable, but the stomach is very liable to be upset with it, and the eructations are most annoying after full doses.

For hospital patients this drug may be advantageously administered in combination with Cubebs as a confection—

R. *Pulv. Cubebæ* $\bar{\text{z}}\text{ij}$.
 Pulv. Potassii Nit. $\bar{\text{z}}\text{ij}$.
 Pulv. Doveri $\bar{\text{z}}\text{ss}$.
 Ol. Santal. $\bar{\text{z}}\text{ij}$.
 Bals. Copaibæ *q.s. ut fiat*
 electuarium durum.

Signa.—"The size of a hazel-nut to be taken in wafer paper, three times a day, two hours after meals."

The following mixture is an old but rather disgusting combination—

R. *Bals. Copaibæ* $\bar{\text{v}}\text{vj}$.
 Liquor. Potassæ $\bar{\text{z}}\text{ij}$.
 Mucilag. Gum. Acaciæ $\bar{\text{z}}\text{j}$.
 Spt. Ætheris Nit. $\bar{\text{z}}\text{ij}$.
 Aquæ Cinnamomi $\bar{\text{z}}\text{vss}$. *Misce.*

Ft. mist. *Capiat* $\bar{\text{z}}\text{ss}$. *ter in die, p.p.a., post cibos.*

Copaiba is apt to produce a profuse rash almost identical with measles ; it declines rapidly on withdrawal of the drug. Cubeb powder may be given in wafer paper or in milk.

Local Treatment.—This is of more importance than the constitutional and is the sole routine employed by many surgeons. Two distinct methods are employed—*irrigation* and *hand syringing*. Irrigation of the *anterior* urethra is carried out by using a 3-pint reservoir with 8 feet of rubber tubing, to the end of which a suitable urethral nozzle is fitted. The fluid is permitted to flow into the urethra by elevating the reservoir about 5 feet. The meatus is compressed and allowed to relax in rapid rhythm, so as to balloon the urethra and overfill it, after which the fluid is permitted to flow out by the side of the nozzle. As a rule the force of the compressor urethræ muscle will prevent the fluid reaching the posterior urethra, and this may be assured by squeezing the penis in front of the scrotum. A few drops of a 1 per cent. Cocaine solution may be injected before commencing.

In irrigation of the *posterior* urethra a rubber catheter should be passed till the bladder is reached, after which the instrument is withdrawn gradually till urine ceases to flow ; the fluid is then slowly injected into the prostatic urethra, and passes into the bladder, mixing with the urine ; or the method of Janet without catheterisation may be employed as for anterior instillation by overcoming the resistance of the compressor muscle by raising the reservoir 6 or 8 feet.

The fluids used in irrigation are numerous : the safest and most satisfactory is a solution of Permanganate of Potassium, commencing with the strength in an ordinary acute anterior case of $\frac{1}{4}$ gr. to each ounce (about 1 in 2,000), or 12 grs. to the full of the reservoir, the entire contents (3 pints) of which may be used at each operation twice a day ; the liquid should be heated to 105° F. As the urethra becomes less sensitive the strength can be gradually increased to double the above proportions, or lessened when much pain is present in very acute cases. 10 days usually suffice to destroy the gonococcus by this method. The new Silver Salts—Argyrol, Protargol, Albargin, &c.—are used by some surgeons for irrigation, but the permanganate is on the whole preferable ; these agents are more suitable for syringing. A good practice in many cases is to combine both methods, using the silver salts with a syringe and irrigating with the permanganate.

Syringing.—The chief objection to this method of treating gonorrhœa is the danger, especially when a syringe is employed with a blunt nozzle, of the gonococcus being forced backwards into the posterior urethra. With precautions, such as grasping the penis in front of the scrotum and using a fine nozzle, this danger is minimised or prevented. Permanganate may be selected if the case is seen early ; the strength of the solution need not at first be more than $\frac{1}{4}$ gr. per oz., which can gradually be increased till double the amount is tolerated. Permanganate

of Zinc is much used also, and it can be employed in the same strength. Even in the most acute cases the potassium salt can be injected every hour in warm solution if only 1 gr. in 5 or 10 oz. be employed till the acute irritation subsides.

Most authorities advise silver salts in preference to all others, especially when the case is not seen till the discharge is well established. In anterior urethritis 4 drs. of a recently prepared solution of $\frac{1}{4}$ per cent. Protargol, Albargin, Actol, Ichthargon, Argyrol, Collargol, or Argonin may be injected 3 or 4 times a day, the strength being gradually increased and the period during which they are retained in the urethra prolonged for 10 minutes or more. 1 per cent. solutions are soon tolerated. Some surgeons commence with irrigations by permanganate or weak Perchloride of Mercury solution (1 in 20,000) before employing these salts when the inflammation is very acute. Protargol is the best of the silver salts for ordinary use. At a later stage, when the discharge has been well checked, the period for the use of astringent solutions has arrived, in order to combat the inflammation which the gonococcus has left behind after its destruction has been effected by antiseptics. It is a mistake to start with pure astringent agents in the acute stage with profuse discharge. Zinc Sulphate 1 gr. to 1 oz. is the best routine Acetate and Sulphocarbolate of Zinc, Acetate of Lead and Alum, may all be used of double this strength. Chloride of Zinc $\frac{1}{4}$ to 1 gr. and Nitrate of Silver $\frac{1}{4}$ to 1 gr. per oz. are also valuable antiseptics and astringents for use in the late stages.

Richard's injection consisted of 5 grs. Sulphate of Zinc and 5 grs. Acetate of Lead per oz. Berkley Hill employed an injection in the late stages of gonorrhœa which consisted of a number of the above combined—zinc sulphate 35 grs., alum 35 grs., sulphate of iron 20 grs., sulphate of copper 2 grs. in 8 oz. water, but this should only be used when the disease is of several weeks' standing.

Ultzmann's injection as modified by Guiteras consists of 10 grs. each sulphate of zinc, alum and carbolic acid with 1 oz. glycerin and 7 oz. water. In the chronic stage of anterior urethritis passing into gleet all the above except Hill's injection may be safely employed in double the strength mentioned.

In treating gonorrhœa of the anterior portion of the urethra the patient should always be directed to flush out the canal by passing urine before injecting. The solution should be used warm. A convenient plan is to carry a small wide-mouthed bottleful of the injection in the trouser pocket, which soon reaches a comfortable temperature. It is much better to use a weak solution very often than a strong one less frequently. The liquid should be retained each time by compressing the meatus for a few minutes, and for all purposes the permanganate of potassium solution is the safest and least irritating, but it must be always remembered that the irritation and a slight mucous discharge

may remain after the disease is cured, being kept up by continual syringing.

The successful treatment of gonorrhœa by injections depends, upon the whole, much less upon the nature of the injection than upon skill in prescribing it. The writer, therefore, ventures to suggest to the young practitioner the advisability of selecting one drug and adhering to it persistently, varying its strength and altering the frequency of the injections according to the effect desired or produced. By these means he soon becomes master of the remedy, and he will be astonished to find how much he will be able to do with it, and how easily he can alter its effects to suit the constantly changing conditions of the diseased state. The endless varieties of injections tempt the physician to change from one to the other, to the detriment of the patient and to the deterioration of his own experience. This principle applies to every department of treatment, and is one of the secrets of the success of some physicians, whose conservative prejudices have prevented them from trying most of the new and often worthless drugs daily written up in the current literature of medicine.

Little need be said of the method of treating gonorrhœa by antrophores or bougies made of Thallin, Iodoform, &c., incorporated with a firm easily melted basis; they are more suitable for Gleet (which see). Klapp's suction bell is employed by some surgeons, and Thomson and Miles state that by applying it to the penis for 10 minutes and reapplying it after an interval of 5 minutes, during an hour's duration daily for 10 to 14 days the disease may be satisfactorily dealt with in recent cases without resorting to other measures.

In *acute posterior urethritis* the urgent symptoms should be first met by a hot Sitz-bath and a saline purgative followed by a suppository of Morphia $\frac{1}{4}$ gr. with 1 gr. Green Extract of Belladonna and Urotropin internally. (1) The irrigation method (Janet's) already described may be carried out by elevating the reservoir to the height of 6 or 8 feet to overcome the action of the compressor urethræ muscle; (2) Diday's plan of introducing a catheter to the prostatic portion of the urethra and injecting the liquid into this portion of the canal from which it flows into the bladder which should always contain urine before commencing the operation. The Permanganate of Potassium solution is the most easily managed; it should be injected warm and at first not stronger than 1 in 5,000. Protargol may be used much stronger, commencing with $\frac{1}{2}$ per cent., which may be doubled after a few irrigations. Nitrate of Silver is much more painful, and if used should not exceed 1 in 500 or 1 in 1,000. (3) There remains Guyon's method of instillation. This is carried out by injecting with an Ultzmann's syringe 15 mins. of a 1 per cent. Nitrate of Silver solution through a soft catheter, whose eye is lodged in the prostatic portion of the urethra. Every second day is sufficient for the instillations which may be stopped when

the urine collected at the end of micturition is found to be clear. The best procedure is to *irrigate* first with permanganate and reserve *instillation* for cases where this fails. The instillation treatment of posterior urethritis practically becomes the treatment suitable for gleet or chronic posterior urethritis since the acute stage is often allowed to pass off under palliatives—bathing, suppositories, &c., under these circumstances stronger solutions may be employed as described under Gleet. When the gleet stage is approached dependent upon chronic anterior urethritis, hand syringing with Silver Salts or the astringent agents mentioned upon a previous page are to be persevered with, the strength of the solution being increased to 2 or 3 times that usually employed for the treatment of the acute disease.

Six to eight weeks in the great majority of cases of gonorrhœa should see the disease entirely subdued, and often under judicious treatment in half this time the patient is convalescent. If doubtful of the result of cure the surgeon may inject a 1 per cent. nitrate of silver solution into the urethra to provoke a mild urethritis, and examine carefully this discharge for gonococci, or if the convalescent patient returns to the use of alcohol (beer or wines especially), and notices that the discharge reappears, he must submit to further treatment. Chronic posterior urethritis will yield speedily to X-ray treatment. The highly infectious nature of the gonorrhœal discharge must be explained to every patient, and he must be warned of the danger of transferring the gonococcus to his eye by soiled fingers or towels. Marriage must be forbidden as long as any trace of discharge is present, and as the gonococcus may remain dormant in the urethral glands for many months, a two years' interval will be necessary as a safe precaution in all instances.

Magian of Manchester states that in 100 consecutive cases of gonorrhœa he has employed his *rapid* treatment, and only in 3 was the cure delayed beyond the seventh day. In most cases the disease was cured in 5 days. The following is a short account of the technique which he employs as stated in his paper in the *British Medical Journal*, June, 1911.

He commences by giving a 3-gallon irrigation of 1 in 5,000 Pot. Permang., sufficient elevation being used to drive the injection up to the neck of the bladder by a two-way irrigation tube. He then irrigates under high pressure by 3 gals. distilled water followed by the same amount of fluid containing 1 oz. Protargol. 30 grs. Chloride of Gold in 40 oz. water is next injected under pressure, using a single-way irrigator nozzle, and after an interval, irrigation by distilled water follows this. The patient is then sent home to use a $\frac{1}{2}$ per cent. injection of Protargol 8 to 10 times during the next 24 hours, and to take an Allosan (Allosan is the allophanic ester of santalol) tablet every 3 hours. At bed-time a 6 inch Neisser bougie containing 1 per cent. Protargol and 2 per cent. Antipyrine is tied in.

The above-mentioned irrigations are repeated in increasing strength on the second, third and fourth days. On the fifth day he uses 3 gals. weak Zinc Sulphate and on the sixth a similar amount of weak Silver Nitrate, after which the cure is almost invariably complete.

The *complications* of gonorrhœa in the male are numerous, and as these will be dealt with under the headings of Conjunctivitis, Orchitis, Bladder Inflammation, Rheumatism, &c., only a brief reference is here necessary.

Pain in micturition may be relieved by immersing the penis in very warm water or by passing urine when sitting in the hot Sitz-bath. *Painful erections or Chordee* should be met by a full dose of Camphor Monobromate (10 grs.) in cachet or by a large warm-water enema, followed by a suppository as under, or Cocaine may be injected.

Sleep may be induced by large doses of Bromides (60 to 90 grs.), with 10 grs. Chloral, when morphia is contra-indicated.

R. *Morph. Hydrochlor.* gr. $\frac{1}{3}$.

Ext. Belladonnæ Vir. gr. j.

Pulv. Camphoræ gr. v.

Olei Theobrom. ad gr. xv. *Misce.*

Fiat suppositorium. i. utendum h.s.

Balanitis, when the foreskin is long, is liable to supervene. It should be met by freely syringing the prepuce with warm Boric Acid solution and absolute cleanliness.

Inflammation of Cowper's glands sometimes ends in suppuration. It is wiser not to wait for the chance of the pus finding its way into the urethra, but to make a free perineal incision to avoid the danger of a urinary fistula.

Peri-urethral abscess about the fossa navicularis may be left to open into the urethra, but when surrounding the penile portion of the canal it should be incised from without.

Buboes should be treated by absolute rest and warm fomentations or Boric Acid poultices, and incised as soon as matter forms. They are probably always due to a mixed infection.

Epididymitis is usually regarded as an indication for the suspension of all injections, but the writer finds that very warm and weak Permanganate injections cause no increase in the inflammation of the gland, and may even afford some relief. All other solutions should be prohibited. Absolute rest with the support of the testicles on a shelf or by a suspensory bandage and the application of Ichthyol, Belladonna, &c., are necessary. The further treatment by leeching, incisions, tapping, &c., will be discussed under Orchitis.

Gonorrhœal rheumatism is a serious sequela, and, like gleet, septicæmic or pyæmic conditions and many other sequelæ, is being now treated by Vaccination and Serum Therapy, as will be described under its own heading.

Gonorrhœa in the Female.—This is a much more serious disease than is generally recognised, owing to the grave complications which may arise in the pelvis even when the vaginal or urethral symptoms are latent. The routine of injecting the vagina is open to the danger of infecting the uterus, and it must be carried out with care. Bierhoff's method of abortive treatment is carried out by thoroughly disinfecting the urethra and vulva and irrigating the vagina with a 1 per cent. Protargol solution, after which the latter is thoroughly cleansed by mopping with cotton-wool, and if no gonococci are found in a scraping from the cervical canal the vagina is to be packed with gauze soaked in the solution and a 5 per cent. protargol bougie $1\frac{1}{2}$ inches long is inserted into the urethra. The tampon is left *in situ* for 24 hours, and the bougie allowed to remain in the urethra by directing the patient not to pass water for 2 hours. The plugging is renewed after a Sitz-bath, and fresh irrigation performed upon removing the second tampon. Daily irrigation of the vagina is to be carried out by a 1 in 4,000 Perchloride of Mercury or a $\frac{1}{2}$ per cent. Sulphocarbolate of Zinc solution. Where the vagina is found to be infected at the start a 5 per cent. Protargol irrigation is to be used before plugging the canal. A good and safe routine is to flush out the vagina with a strong Permanganate or Zinc Sulphate lotion after swabbing with Peroxide of Hydrogen.

In chronic cases where the cervix has become infected, curetting of the canal should be carried out before plugging it with 2 per cent. protargol. The urethra should be dilated by a Kelly's speculum, and the bladder swabbed or irrigated by Nitrate of Silver solution when cystitis is present, and Sandal-Wood Oil should be given. Abscesses arising from suppuration of Bartholin's gland should be opened early.

Pyosalpinx is to be treated by removal of the tubes with or without the ovaries, as detailed under its own heading.

GOUT.

Preventive treatment is quite within the sphere of practice, since the tendency to gout is known to be hereditary in a large proportion of cases; but prophylactic measures are often postponed till too late, owing to the association in the lay mind of gout with advanced age, so that no precautions are taken till after the first attack, which in well-marked hereditary cases commonly occurs at or before the thirty-fifth year of life. In the case of children born during the later years of the life of gouty parents the first attack often occurs as early as the thirtieth year.

The most important preventive agent is free open-air exercises, walking, riding, and games like cricket and golf. These should be insisted upon in the idle and well-to-do class born of gouty parents. In those who have to work for their living, an occupation should be selected which as far as possible will be incom-

patible with a sedentary life, and this must be supplemented with open-air games and brisk exercises.

Diet is of great importance, and the preventive treatment in this detail is identical with the dietetic treatment of the established disease. Over-eating is a potent cause of gout in those whose history shows no hereditary taint, and therefore in those with a family predisposition moderation in diet is an essential. The old view that animal food was the main factor in the production of gout led to the rigid prohibition of red meats of all kinds, and the author, in his "Practice of Medicine," has pointed out that the revolt against the uric acid theory has tempted many physicians who regard the production of uric acid as originating in the increase of the destruction of the nucleins in the leucocytes to err on the other side. Hence it is not uncommon to see foods recommended which are rich even in nucleins and purin bases such as pancreas, sweetbread, brains, roe, game and red meats. If such are permitted at all, they must be allowed in small quantities. Fish, poultry, fresh vegetables, vegetable soups, cheese, bread and farinaceous foods should constitute the staple dietary. Boiled meats are better than roasts. Sweet fruits like strawberries, apples and oranges, and recooked dishes, pastry, sweet puddings and sugar should be avoided. Cocoa should be the ordinary breakfast beverage.

The amount of food swallowed is, however, often of as much importance as is its chemical constitution, and it is not unusual to find that when animal food is prohibited the patient takes to enormous quantities of farinaceous compounds to make up the deficiency. Gourmandising must be avoided, no matter how mild and apparently unobjectionable the quality of the food may be, and many gouty patients are unable to digest farinaceous stuffs. Fats as cream and butter may be freely taken, and salads are beneficial. Mineral Waters (aerated) or hot water flavoured with a slice of lemon should be copiously employed to flush out the kidneys and promote elimination. The less strong tea and coffee the better, and these should be prohibited when an animal dietary is indulged in, though the vegetarian may partake of them.

Alcohol is always injurious, chiefly when indulged in as fermented beverages, like Champagne, Burgundy and Port, though it is now fashionable to prescribe these wines in small amounts as a protest against old-fashioned treatment. All wines are injurious, as are also cider, beer and porter. When from any cause as cardiac or gastric weakness or insomnia, alcohol is indicated, the beverage should consist of a little good whiskey or old brandy or gin freely diluted with soda, potash or Seltzer water. The least objectionable wine is a good Hock or Moselle drunk with Seltzer or Apollinaris water.

A holiday at a mineral-water spring at which golf or other active open-air exercise can be procured is as beneficial to the overworked sedentary inheritor of a gouty tendency as it is to

the victim of the established disease. Harrogate, Buxton, Bath, or Strathpeffer at home, Carlsbad, Aix-le-Bains, Contréxéville, Kissingen, Homburg, and many others abroad are in repute. Roberts advises gouty patients to avoid all spas where waters are charged with soda salts, and he recommends chloride of potassium instead of table salt, but many patients do well at Vichy. The imported waters of most mineral springs may be freely used at home, but as a rule, when this plan is followed, it is useless, as much more can be swallowed at the resort, where hours of recreation and meals are directed with the view of a free indulgence in the water, of which a gallon per diem is not an unusual quantum.

Treatment during an Acute Attack.—The patient must be confined to bed or to his sleeping-room, but such a direction is usually superfluous, as the attack renders all locomotion impossible. Rest of mind and freedom from business worry is essential when possible. His diet should consist of weak diluent drinks, as a thin vegetable soup, milk and Kali water, or barley water, toast and water, with a few plain arrowroot biscuits. Beef extracts are often given, but they should be avoided. Debilitated subjects may be permitted to take freely of chicken soup thickened with barley or other farinaceous material. Alcohol is seldom indicated, and when very specially demanded a little whiskey with Kali water may be permitted.

The best local treatment is to place the affected joint, which is usually that of the great toe, in a position of absolute rest, to surround it with a thick layer of dry absorbent wool covered up by thin mackintosh or oiled silk, evenly but lightly bandaged, and to rest the foot placed upon a pillow so as to slightly elevate it. When the patient is restless he may be allowed to sit in an armchair with his foot supported upon a chair, which is better than the fashionable gout-stool. The wool dressing should be changed every 12 or 24 hours, and a layer of warm wool reapplied.

When the pain is unbearable local sedatives must be applied. Leeching and blistering or other form of counter-irritation are always contra-indicated, and poulticing is objectionable. A hot stupe, fomentation or foot-bath often gives relief, but cold applications or lotions should never be employed. One of the best methods is to wring a flannel cloth out of a very hot decoction of poppy-heads or chamomile-flowers, and apply it to the anterior part of the foot, or the flannel may be wrung out of hot water and lightly sprinkled with the Liniment of Chloroform, Aconite or Belladonna and applied to the part. For most cases it is best to sprinkle the woollen dressing with a little of any of these liniments, and then envelop the part with more wool and an impervious dressing, care being taken that the dressing be not saturated with chloroform liniment, which might blister. A mixture of two or of the three embrocations may be safely employed, but it should not cover the entire foot.

Hot Alkaline lotions are recommended by Yeo and others. They possess no advantage over spirituous liniments, and are, moreover, liable to cool and so expose the part to variations of temperature, which is always to be avoided. Duckworth's application consists of 20 grs. Morphia Hydrochlorate dissolved in 6 oz. Belladonna Liniment, but it is very doubtful if the morphia has any action when used in this way. If dissolved in chloroform liniment absorption would be liable to occur, and morphia is a most undesirable drug to be circulating in the blood during an attack of acute gout, hence relief of the local pain by morphia hypodermically is to be avoided when possible.

Internal remedies for the relief of the pain in acute gout should give way to Colchicum. This remains still an empiric remedy, as we have no knowledge of how it acts as an analgesic. It certainly may relieve pain without increasing the secretion of the kidney, bowel or skin; therefore, its action cannot be said to be eliminatory. Its effects are, however, increased by combining its administration with purgatives; hence, if a full dose of a saline cathartic has not been already prescribed, the best procedure will be to administer the following ancient formula:

R. *Vini Colchici* ℥iv.
Magnesii Sulphatis ℥iss.
Mag. Carb. Pond. ℥ij.
Aquæ Menthæ Pip. ad ℥xij. *Misce.*

Ft. mist. Cpt. ℥ij. statim and ℥j. quartis horis. p.p.a.

It will be observed that the first dose of the wine of colchicum in the above mixture will be 40 mins.—a dose which never should be exceeded or repeated, but which is quite safe when given with a brisk cathartic. It is an excellent plan to direct the gouty patient to take a 5-gr. Blue Pill as soon as he feels the first approach of an attack 8 hours before commencing the colchicum treatment. The above mixture after 24 or 36 hours should be given in $\frac{1}{2}$ -oz. doses three or four times a day.

Salicylate of Sodium, or better still of Potassium, is the next best routine when from cardiac weakness or idiosyncrasy the colchicum cannot be given. It also has some depressant action upon the heart, but less so than colchicum. 30 grs. may be given at once, and half this amount every 3 or 4 hours. The salicylate of potassium may be given in effervescence with Lemon-juice and Bicarbonate of Potassium with advantage, as this increases its diuretic action. Luff advises drinks of Cream of Tartar (20 grs.) dissolved in 10 oz. hot water frequently throughout the day. The fever is reduced and all the excretory organs—bowels, skin and kidneys—are kept in an active state by these agents.

Insomnia is best met by Hyoscine as Tirard suggests, or by

Trional or Paraldehyde. The latter is the writer's routine hypnotic in gout, and he never prescribes Morphine or Opium.

The purging should be stopped and the colchicum diminished or suspended as the attack passes off, and the patient gradually returns to a white fish and chicken and farinaceous diet.

Between the attacks the treatment by diet, exercise in the open air, an occasional natural purgative water, &c., is to be maintained. A host of drugs are recommended at this stage. Alkalies have been employed as a routine by most physicians on the theory that they form soluble salts with uric acid, which is thereby easily eliminated by the kidney; but they no longer hold their own, and Roberts maintains that they are worthless. Lithium, the most prized of the group, has fallen into comparative disuse, and all authorities are agreed that soda salts should be avoided, some going so far as to insist upon a salt-free diet. There cannot, however, be a doubt about the value of such alkaline waters as Carlsbad and Contréxéville when drunk at the spas. They probably act by their large volume, possibly independently of their mineral constituents, and a sojourn at any of the places previously mentioned is a good routine after one or more acute attacks.

Salicylates are prescribed by many in the intervals between the attacks, though their best effects are to be witnessed during the seizure or immediately afterwards. Haig claims special virtues for pure Phosphate of Soda, and others employ the Phosphate or Chloride of Ammonia.

Urotropin, Piperazin, Lysidine, Citarin, Chinotropin, Uricedin, Urosin, Benzoates and Diuretin compounds are but a few of the innumerable gout remedies which have been extolled and, like Lithium, for the most part found valueless. The latest member of this group of so-called specifics is Thyminic Acid, which is Nucleotin-phosphoric Acid with the trade name of "Solulol." It is undoubtedly a good laboratory solvent of uric acid, and being a product of the metabolism of the food nucleins, it is believed to have a strong affinity for uric acid, whose precipitation is thereby prevented. The drug is given in tablets of 4 grs. each, two being taken thrice daily after meals, and Fenner and Schmoll report favourably of its virtues. The latter authority states that the combination of uric acid and thyminic acid circulating in the normal blood cannot possibly be detected as a uric acid compound by any known reagent, but if the thyminic acid be absent the uric acid is precipitated in the joints and tissues.

The treatment of chronic gout is often most tedious and unsatisfactory. It must be conducted upon the lines suitable for acute and subacute attacks. The dietary will require continual changing or modification, especially as most of the patients are well on in years and often seriously debilitated by the wearing pains of chronic joint deformities and asthmatic, renal or cardiac

complications. As a rule a more liberal supply of animal food must be given when it is craved for or when farinaceous stuffs cannot be digested. In addition to white fish and poultry plain boiled mutton and eggs with ordinary clear or thick soup may be allowed in moderate amount if not fortified by beef extracts, but the foods rich in purins as sweetbreads, brain, liver, pancreas, roe, &c., must be rigidly excluded. Game may, however, be permitted in the form of roast pheasant, and oysters occasionally.

Alcohol will be more frequently indicated than for younger patients, and the same rule holds good—distilled liquors in small amount and well diluted are always to be preferred to fermented beverages; Still Hock or Moselle with Apollinaris water or a little dry Sherry may, however, be allowed when spirits are objected to.

Exercise is a great difficulty, as locomotion is often seriously impeded, and its place must be taken by general massage, hydro-pathy, warm douching, and the hot-air or radiant heat (electric) bath, all of which remedial agents are now procurable at every alkaline spa, where the waters may be freely indulged in for a couple of months in each year with great advantage.

When the patient is at home, the bowels must be more than merely kept free from constipation. A smart saline should be administered at least twice a week, and an occasional Blue Pill is always beneficial.

Colchicum is only to be administered when an acute or sub-acute exacerbation of the arthritic troubles supervenes. It is a well-recognised fact that aged patients bear this drug badly, and the dose of the wine should not as a rule exceed 15 or at most 20 mins. thrice daily. Salicylate of Colchicine is often better borne in doses of $\frac{1}{60}$ gr., or two capsules which each contain $\frac{1}{250}$ gr. of this salt dissolved in methyl salicylate may be given three or four times a day.

Salicylates are often beneficial in short courses by relieving the wearying joint pains, and Guaiacum has long enjoyed a reputation of a similar nature. Even the old-fashioned and despised "Chelsea Pensioner," which contains guaiacum, sulphur, and other drugs sometimes proves a valuable routine preparation, and it keeps the bowels free. Guaiacum resin may be administered as a 5-gr. tablet three times daily.

Iodide of Potassium is upon the whole the most reliable drug in chronic gout. It may be given in 5 to 10 gr. doses in courses of 6 or 8 weeks duration, alone or in combination with minute doses of Arsenic (1 min., Fowler), or 5 min. doses of Colchicum wine.

This has shown that much good may be achieved by Radium emanations, and he states that after 14 days of treatment by drinking water containing radium the uric acid disappeared from the blood.

The treatment of the chronic joint inflammations and de-

formities must be cautiously carried out. Pain may be relieved by the applications which soothe the acute arthritic manifestations—viz., an anodyne liniment containing Belladonna, Aconite and Chloroform—care being exercised that the belladonna constituent be not of such strength as to cause danger from its absorption. A safer application is the green extract rubbed up with glycerin. If friction be employed it must be of the gentlest.

A warm alkaline lotion of 1 of Bicarbonate of Potash in 40 of water applied under oiled silk may be tried, but the tendency to gouty dermatitis or eczema may be brought into intense activity by wet applications, and arnica especially should never be applied to a gouty joint; a dry heat is always best.

Stiffness and indurations may be often removed by skilful and gentle massage, with passive movements so conducted as not to set up pain or fresh arthritis. Counter-irritation should be avoided, but mild Iodine preparations may be found useful.

Gout-stones should not be actively dealt with when not causing pain or great discomfort. Their removal is impossible by drugs administered with the intention of dissolving the deposited urate of soda, since they are already extravascular.

Alkaline hot lotions may be applied when the skin has ulcerated, and under very exceptional circumstances as when stones seriously impede the movements of an essential joint, the skin may be incised and the concretion turned out. The use of electrical currents, X rays, electrical endosmosis, cataphoresis, &c., generally prove futile and sometimes mischievous.

Retrocedent gout shows itself when the gouty inflammation flies to some internal organ from the inflamed joint during an acute attack, and the metastasis may prove fatal if not promptly dealt with. Very hot mustard fomentation should be applied to the joint from which the pain, heat, redness and swelling have suddenly departed, with the view of re-establishing the original arthritic disturbances. Colchicum should not be given, and if the patient has been already under its influence the drug should be promptly suspended. A smart purge and a hot mustard pack to powerfully stimulate the bowels and skin to eliminate the poison is the only safe resource.

Symptoms must be treated as they arise. When the metastasis is cardiac a hot mustard fomentation should be applied over the heart region, and strychnine given hypodermically. When brain symptoms with delirium or coma are present, the ice-cap is a doubtful agent to resort to. 2 drops of Croton Oil may be placed upon the tongue, and a hot sinapism applied to the nape of the neck. Gouty patients bear blood-letting badly, and leeching would be useless under such circumstances, but when death is threatening a vein must be opened. This should not be done till a warm saline solution is prepared, which should be immediately injected into the opened vein in twice the amount of the blood let out. This need not exceed 15 to 20 oz. The

serum may be hypodermically injected in heart cases without blood-letting when the patient has been placed in the hot pack.

When the stomach is affected the best procedure will be to speedily inflame the skin with a very hot mustard fomentation, and give warm water copiously by the mouth, and assist elimination by the hot pack, and hypodermic or rectal injection of warm saline to dilute the poison in the blood.

The different diseased conditions which complicate gout, as eczema, neuritis, cystitis, renal cirrhosis, asthma, dyspepsia, glycosuria, &c., will require treatment on the lines recognised as suitable in each affection, the underlying gouty condition being always attended to by diet and drugs, as above detailed.

GRAVEL—see Stone in the Kidney and Bladder.

GRAVES'S DISEASE—see Goitre, Exophthalmic.

GUMS, Spongy—see Stomatitis.

GUNSHOT WOUNDS—see under Wounds.

HÆMATEMESIS.

The treatment of hæmorrhage from the stomach (hæmatemesis, gastrorrhagia or gastrostaxis), has already been dealt with under Gastric Ulcer; only a brief résumé is necessary here.

Absolute rest in the horizontal position, and physiological rest to the stomach, as far as possible, should be maintained. Ice sucked in the mouth or swallowed in small pieces, should be the only substance permitted to enter the stomach, but often much harm is done by permitting the patient to distend his stomach with water in this manner, as the temperature of the liquefied ice soon is raised to that of the body, and no hæmostatic action is procured. *Minute* quantities of ice may be employed to assuage the intense thirst which is always present. Stimulants, food and even medicines must be administered by the bowel.

Iced compresses in thin subjects, and dry cups and smart sinapisms, where the abdominal walls are thick, may be employed externally in severe cases. If iced compresses are used, they should not be kept on longer than 30 minutes at a time, as congestion of the gastric membrane will occur. Hot foot-baths, with or without mustard, tend to diminish hæmorrhage by acting as revulsants.

Morphia, given as a suppository or by hypodermic injection, arrests peristaltic action in the stomach, allays nervous excitement and calms the circulation, putting the patient into the most favourable conditions for recovery.

Chloride of Calcium should be given as a routine in all cases; by rapidly increasing the coagulability of the blood it tends to seal up the open mouth of the bleeding vessel. It should be

administered in 1 dose of 60 grs. dissolved in 3 to 5 oz. water injected slowly into the rectum. Suprarenal Gland in the form of Adrenalin Solution may be given by the mouth (30 mins.) mixed with 1 dr. water. This drug should not be given hypodermically, as by raising the general blood-pressure it may increase the hæmorrhage. It may be given by the mouth when the lime salt has been injected into the bowel.

In desperate cases of gastrorrhagia, where neither of these remedies is retained, the only resource left to the physician is to inject normal Saline solution into a vein or into the subcutaneous cellular tissue at different parts of the body, using 20 to 60 oz. With the hypodermic injection the Chloride of Calcium may be combined. Intravenous injection in these cases may be very difficult; owing to the empty condition of the superficial veins it may be difficult to expose one satisfactorily, and the hypodermic route answers all requirements.

Gelatin hypodermically in 2 per cent. solution or even up to 10 per cent. has been injected deeply into the gluteal region; it must be most carefully sterilised, as death from tetanus has several times followed these injections. It is now procurable in sterilised glass tubes, the contents of each when mixed with 5 oz. boiled water make a 2 per cent. solution for injection. The drug may be combined with the saline injection, or in mild recurring gastric hæmorrhage it may be given by the mouth.

The use of the above agents has entirely superseded the older method of drenching the patient's stomach with Tannin and its compounds, Lead, Turpentine, Perchloride of Iron, Nitrate of Silver, Alum, Ergot, &c.

Ergot hypodermically still survives in the practice of some physicians, but it never should be employed in gastric hæmorrhage where its action is totally different from that observed in uterine bleeding.

When vomiting is severe and the hæmorrhage moderate in amount, the writer has obtained good results by administering a 3 min. Creosote capsule after the stomach has been emptied by spontaneous emesis.

When the hæmatemesis is not due to ulcer or cancer, its source is probably a ruptured varicose vein at the lower end of the gullet. In such cases the underlying hepatic congestion will require prompt treatment, 5 to 10 grs. Calomel may be placed on the tongue and washed down with a teaspoonful of water, or a saline purge may be given. Nitrite of Amyl may be tried, but all agents which increase the blood-pressure are to be avoided. Adrenalin by the mouth may be useful from its local action. In purpuric cases Chloride of Calcium by the rectum is the best routine.

The *surgical* treatment of hæmatemesis has been already discussed under Gastric Ulcer, and the necessity has been emphasised of the importance of operating in recurring hæmor-

rhagic cases during the intervals of bleeding in order to prevent the occurrence of a fatal hæmorrhage. Gastro-enterostomy meets all the requirements of these cases as the hæmorrhage usually is promptly arrested by making a new route by anastomosis of the stomach with the jejunum, and the same practice holds good in gastric cancer accompanied by hæmorrhage.

HÆMATIDROSIS.

Bloody sweating, when not caused by the malingerer, is nearly always a manifestation of the hysterical condition, and requires no treatment, the authentic cases reported as being of a true vicarious nature recovered spontaneously. Such should not be interfered with, except by an attempt to restore some normal flux which has been checked as in amenorrhœa. Saline purgatives or revulsive treatment by very hot foot-baths or sinapisms can do no harm in this rare condition.

HÆMATOCELE.

The treatment of a hæmorrhage into the cavity of the tunica vaginalis testis or cord consists in rest in bed, with the patient lying upon his back and a small board placed across the upper part of the thighs, so that the swollen organ may rest upon this as on a shelf. A pillow may be employed, but the wooden shelf is better. Iced lotions or a small ice-cap should be applied to the scrotum in recent cases in order to prevent further extravasation. A cradle should be employed to keep off the weight of the bedclothes, and the bowels should be moved by a smart Saline purgative.

In cases of *hydro-hæmatocele*—i.e., those in which extravasation of blood occurs into a previously existing hydrocele—the blood may remain fluid, and a simple tapping operation may be tried, a moderately sized trochar and canula being employed, but should the fluid accumulate again a repetition of the tapping will most likely prove a failure for the cure of the original hydrocele. As a rule the tumour of a hæmatocele is tense or solid, and if treated on purely expectant lines, the blood is seldom absorbed; suppuration may result, or the walls of the sac may become greatly thickened or even calcified.

The best routine treatment in all cases is to freely open the tunica as in the modern operation for the radical cure of hydrocele. The clot should be turned out, the sac with the testis withdrawn from the scrotum, and the sac being retroverted or turned inside out, the edges of the incision in the walls of the tunica vaginalis are sutured behind the epididymis and the testicle returned to the scrotum, drainage being provided.

When the operation has been delayed, it will usually be necessary to dissect out the thickened wall, and it may even be necessary to remove the atrophied testicle, or as recommended by Gould, the entire mass including the testicle may be completely excised.

Should suppuration of the contents of the hæmatocele tumour have occurred when first seen by the surgeon, the sac should be freely incised, swabbed out with Perchloride of Mercury Solution, and free drainage established. When a hæmatocele supervenes upon malignant disease of the testicle, castration should be effected without delay, and the cord must be also removed high up. Hæmatoceles of the cord and of the epididymis occur when blood is extravasated into encysted hydroceles in connection with these organs. The treatment in the first instance should consist in tapping, and if the fluid returns the radical operation of the removal or excision of the cyst wall should be carried out.

PELVIC HÆMATOCELE.—This condition is almost invariably due to tubal pregnancy, and the treatment consists in immediate operation as described under Extra-uterine Pregnancy on p. 314. The following remarks apply to the treatment of those rare cases formerly regarded as extra-peritoneal hæmatoceles, which are now known to be examples of *Hæmatoma of the broad ligament* and which can be safely treated by the expectant method.

The patient should be rapidly undressed and placed on her back upon a hair mattress, with the pelvis slightly raised by a hard counterpane folded neatly and placed under the buttocks. Collapse may be met with stimulants such as Ether, Alcohol, or Sal Volatile. Opium is the only reliable hæmostatic and restorative in such cases, and in the presence of great pain it may be given fearlessly. Small doses are useless; a teaspoonful of laudanum by the mouth, or anus, or $\frac{1}{2}$ grain of Morphia by hypodermic injection, should be administered as soon as possible, and the effect kept up by smaller doses repeated every hour according to the urgency or severity of the symptoms. In the intervals between the doses of opium, Brandy and Ice may be freely given; afterwards Brandy or Whiskey in *small* quantity, diluted with iced milk, will constitute the best feeding during the early days following the seizure. As soon as possible alcohol should be stopped altogether. Local treatment should consist of cold compresses or crushed ice, folded in gutta-percha tissue or oiled silk, and laid over the lower parts of the abdomen. The vagina may be packed with ice in desperate cases. At this stage some recommend brisk purging with Calomel, Croton Oil, or strong Salines. The writer has never had the courage to try these heroic remedies. Nor has he ventured to recommend tight abdominal bandaging.

Cases with the gravest aspect generally recover if kept absolutely at rest and under the influence of opium; and meddling by making repeated examinations and explorations is to be condemned. Many remedies may be tried with the view of arresting the internal hæmorrhage, of these Ergot is the one most useful; it may be given hypodermically, or by the mouth in full doses. Chloride of Calcium, 20 grs. every two hours, is sometimes very efficient. Suprarenal Gland substance, in doses of 5 to 15 grs.,

will sometimes give striking results. Gallic or Tannic Acid, Digitalis, Turpentine, Acetate of Lead, Iron, &c., may possibly only tend to divert the physician's mind from the administration of opium, which, after all, is the remedy upon which the patient's safety depends.

In the face of a rapidly increasing internal hæmorrhage, the operation of opening the abdomen and securing the bleeding vessels may be weighed. If extra-uterine gestation or an ovarian varix is diagnosed this will be justified, but the hope of securing the vessels, from which an ordinary pelvic hæmatoma is fed, is indeed visionary, and the vast majority of cases so treated would probably have their chances of recovery sadly minimised by such an attempt.

The subsequent treatment will be that of peritonitis, pelvic cellulitis, or pelvic abscess. When the shock and collapse have passed away, the resulting peritoneal mischief will call for sedative measures constitutionally and locally. Opium should be still our mainstay, and until all danger of further hæmorrhage has passed away cold compresses are to be preferred to hot poultices. These local anodynes are invaluable at a later stage when pelvic cellulitis is established. Iodide of Potassium, or mild Mercurials, may be given with the view of causing absorption.

In the great majority of cases, the effused blood will either become absorbed, or an abscess will form, which, if left alone, will find its way into the bladder, bowel, vagina, uterus, or through the skin. The practice of puncturing the tumour through the rectum or vagina is followed by some surgeons; there cannot be a doubt that such a routine practice is a serious mistake. When there is evidence that suppuration is already established, and the symptoms and signs lead one to believe that there is danger of the sac bursting into the peritoneal cavity, if a bulging soft point is felt in the vagina or rectum, to wait for spontaneous rupture might be a fatal blunder. The aspirator should be discarded, and a large trochar and canula, such as is used for puncturing the bladder, may be selected, and the canula should be driven well home after the withdrawal of the trochar. Should the contents of the cavity consist of coagula, as well as puriform fluid, the opening should be freely enlarged, and the sac well washed out with warmed solutions of Corrosive Sublimate or Condyl's fluid, injected from time to time through the ordinary enema apparatus, to which a large, soft catheter may be attached. Vaginal puncture is preferred to anal.

HÆMATOMA.

Hæmatoma of the *Auricle* usually resolves more or less completely if left to itself, but since the effused blood is bound firmly down by the unyielding perichondrium, deformity through shrinkage of the cartilage is liable to ensue. If the extravasation is small and seen early the application of an ice-bag may meet all

requirements. In more extensive hæmorrhages puncture is seldom justifiable, since the blood has usually coagulated already. The best procedure is to make under aseptic precautions a free incision through which the clot is to be turned out and the cavity carefully packed by antiseptic gauze so inserted as not to interfere with the configuration of the auricle, a firm padding of cotton-wool being placed behind the ear. A woven bandage should be applied with sufficient firmness to secure a moderate degree of pressure.

Hæmatoma of the *Labium* should be treated when seen early by the application of the ice-bag to check further extravasation, and if let alone small tumours will usually resolve spontaneously, but a large hæmatoma in this region is liable to suppurate, and should be freely incised, the clot turned out, the cavity swabbed with Perchloride of Mercury solution, and any bleeding vessels tied, after which measures the cavity should be firmly packed with Iodoform or Cyanide gauze.

In neglected cases, where suppuration has already set in, the pus should be evacuated by a free incision and the cavity thoroughly flushed out by a warm antiseptic solution and thorough drainage provided.

In cases of long standing the walls become thickened by organised layers of clot, as when the hæmatoma supervenes upon a varicocele of the labium, in which case the entire mass will require excision.

Hæmatoma of the Scalp.—When the extravasation occurs into the space beneath the aponeurosis, the diffusion of the tumour may be prevented by the application of an ice-bag and gentle uniform elastic pressure. Its resolution at a later stage may be expedited by careful massage.

The *Cephalhæmatomata* observed in newly born children usually result from extravasated blood between the bone and the pericranium, and generally yield to the application of evaporating lotions, the ice-bag, and at a later stage, should these not prove effectual, to the mild elastic pressure exercised by a woven bandage over a Spirit lotion applied under oiled silk. Poulticing, aspiration, leeching or puncturing should never be resorted to. Should suppuration occur, a free incision should be made into the centre of the boggy swelling, the pus evacuated and the cavity washed out by a warm antiseptic solution, after which it may be loosely packed with gauze or drained.

Hæmatoma of the *Scrotum* must be differentiated from hæmatocoele; it always yields to rest in bed, with the testicles supported on a suitable splint or shelf and the application of cold lotions, followed at a later stage by the use of Spirit lotion under oiled silk and a suspensory bandage. For *Pelvic Hæmatoma* see p. 393.

HÆMATURIA.

This is but a symptom or sign common to various surgical or medical diseases affecting the genito-urinary tract or to certain general blood conditions, the treatment of which will be found

detailed under its own appropriate heading in each case. It is obvious that the first step before any treatment can be thought of must consist in a careful search for the discovery of the source of the hæmorrhage. Though the trained eye will in the great majority of cases easily detect even a small percentage of blood in the urine, nevertheless many instances occur in which pigments such as indican, hæmatoporphyrin, bile, rhubarb, rosaniline, or bodies formed by the decomposition in the system of carbolates, salicylates, sulphonals, &c., on elimination by the kidney give to the urine the appearance of a hæmaturia which cannot be diagnosed without the microscope. The presence of free red blood cells must therefore be demonstrated in all doubtful cases, and only in this way can hæmoglobinuria be excluded.

The endoscope or urethroscope and cystoscope must be employed when the microscope fails to demonstrate the source of the bleeding.

Urethral hæmorrhage is as a rule easily recognised. It comes before the stream of urine reaches the meatus, and it may flow between the acts of micturition. If due to a gonorrhœal condition the injection of the Silver Salts may be resorted to, but if the blood should appear during the chronic gleety stage the endoscope should be introduced and the bleeding spot swabbed with a strong solution of Nitrate of Silver. If the hæmorrhage be the result of a ruptured urethra an attempt must be made to pass a soft rubber catheter into the bladder, and should this prove successful the instrument may be kept in for 8 to 12 days. Where the bladder cannot be entered in this manner, Cock's operation or an external urethrotomy should be performed at once in order to prevent extravasation, and most surgeons prefer to deal with the wound from without after a grooved staff has been passed along the urethra, as extravasation may sometimes take place even though a soft rubber instrument is tied in the bladder.

For the hæmorrhage caused by a urethral calculus the stone should be extracted by forceps introduced through the meatus. It may be pushed back into the bladder and crushed by a lithotrite or removed by an external incision in the penile portion of the urethra or in the perineal region. Should the hæmorrhage only appear after the stone has been spontaneously passed the bleeding may be controlled by passing a full-sized catheter or sound into the bladder, leaving it *in situ*, and should blood still continue to flow by the side of the instrument, pressure from without will arrest it when a bandage or strapping is applied.

Bladder hæmorrhage must be dealt with by a removal of the cause when this is possible. Thus calculus, enlarged prostate, cystitis, cancer, parasites, villous growths, tuberculosis, diseases affecting the posterior urethra with back-flow of the blood into the bladder, and injuries, including those produced by catheterism, must be met by the use of the drugs or operative pro-

cedures suitable in each case, as will be found detailed under the heading of each primary disease causing the hæmorrhage.

Sometimes, however, the bleeding will require to be controlled when the primary disease is beyond the reach of art, or it may be necessary to treat the hæmorrhage as a symptom till the patient's strength is restored so as to enable him to undergo a radical operation for the removal of the primary cause. Under such circumstances absolute rest in the horizontal position, with the application of iced compresses or Leiter's tubes to the perineum, rectum, vagina, or hypogastric region may be tried. Drugs by the mouth are of little value. The entire group of internal astringents, including the tannin compounds, ergot and lead, possess no remote hæmostatic action. The same may be said of digitalis and suprarenal gland preparations, which by increasing the general blood-pressure may seriously aggravate matters. Chloride of Calcium is, however, always clearly indicated, and may be safely given in 30-gr. doses every 4 hours. It may be combined with Tincture of Jaborandi, which seems to exert some feeble influence over hæmorrhages from the urinary tract, and many surgeons believe that Hazeline by the mouth acts in a similar manner. The calcium salt is the only available agent when the bladder hæmorrhage is the result of purpura, rickets or other constitutional disease.

Injections of hæmostatic solutions directly into the bladder are often markedly efficacious. The most reliable of these is Adrenalin Solution, but all such injections are practically valueless unless the bladder has been first emptied of clots. The largest-sized soft rubber instrument, with a wide opening at its distal extremity, should be introduced, and by attaching its proximal end to a Clover's suction apparatus the organ should be thoroughly washed out or irrigated by a stream of iced water till all clots have been extracted, after which about 4 oz. of Adrenalin Chloride solution (1 in 4,000) may be left in the bladder.

Alum solution (saturated), Nitrate of Silver (2 to 5 grs. per oz.), Hazeline (1 in 2), Perchloride of Iron (1 in 200), or other local astringents may be employed for irrigation, and a few ounces afterwards left in the bladder.

In the bleeding occurring in enlarged prostate, Harrison ties in a soft catheter and applies pressure from without, as in the treatment of post-partum hæmorrhage. A. Fullerton, in a case seen by the writer of sudden uncontrollable hæmorrhage from enlarged prostate which threatened the patient's life, immediately proceeded to remove the enormously hypertrophied gland with complete success.

When the bleeding resists all palliative treatment the best procedure is, as in the last-mentioned case, to open the bladder above the pubes and remove the primary cause. This is the only satisfactory routine in villous growths. In the female equally brilliant results may be obtained by widely dilating the

short urethra, which permits exposure of the growth or ulcerated spot, which can then be curetted and its base cauterised.

Hæmaturia of *renal* origin must be dealt with on similar lines by removal of the primary cause. In acute Bright's disease the diagnosis is usually clear, and the danger from hæmorrhage alone may usually be discarded. The loins may be dry cupped, hot sinapisms or the mustard pack, brisk saline purgatives and Chloride of Calcium internally meet all requirements.

In the renal hæmaturia of such blood conditions as scurvy, purpura and rickets the internal administration of the lime salt, with a diet of fresh vegetables and fresh meat, answers all requirements.

The hæmaturia caused by congestion of the kidney after the administration or absorption of such irritating diuretics as cantharides, turpentine or copaiba is usually checked by the withdrawal of the drugs aided by dry cupping of the loins, hot packs, and copious diluents like barley water.

Where the nature of the renal cause is less obvious the cystoscope should be used, and the urine from the ureters collected by catheterising each separately. The faulty organ is then to be dealt with when the diagnosis by the X rays has been cleared up. Calculus, floating kidney, tuberculous growths, sarcomatous or cancerous tumours, hydatids, Bilharzia, &c., will require either nephrotomy, nephro-lithotomy, nephrostomy, nephrectomy, decapsulation, nephropexy or nephrorrhaphy, as indicated in each case.

Renal Hæmophilia, *Essential Hæmaturia*, or *Renal Epistaxis* are the names given to the rare condition in which a profuse hæmorrhage is found to proceed from one kidney in which no lesion may be discoverable even after the exposure or removal of the organ. The calcium treatment can do no harm in such cases; when the condition has been diagnosed by the eliminatory method the kidney should be cut down upon and the organ exposed and freely incised for exploratory purposes (nephrotomy), after which the local hæmorrhagic condition may be expected to disappear even when the organ is apparently healthy.

HÆMOGLOBINURIA OR HÆMATINURIA.

The treatment of this condition, in which the blood pigment or hæmoglobin appears in the urine, should be that of the primary hæmolysis causing the destruction of the red blood discs, and the treatment is simplified by recognising that the origin of the disease is independent of any kidney lesion, the albumin present in the urine being always in the form of serum-globulin. All forms of hæmoglobulinuria are toxic, and the recognition of the poison is obviously the first step in the treatment. In the non-paroxysmal type of the disorder, one or other of the following poisons may be demonstrated to be the cause, viz., potassium or sodium chlorate sulphuretted or arseniuretted hydrogen,

carbolic or pyrogallic acid, naphthol, carbon monoxide, phosphorus, quinine, or toluylendiamin; the symptoms may be expected to subside rapidly on the withdrawal of the drug.

The hæmoglobinuria which supervenes after transfusion of the blood of the sheep, goat or the horse is of a similar nature and is usually very transitory, requiring no treatment.

The primary disease will require prompt treatment when the affection arises during the course of other diseases as blackwater fever, malaria, typhus, scarlet and typhoid fevers.

The paroxysmal variety of hæmoglobinuria usually appears in the winter months, and follows an exposure to cold and damp. The patient should be ordered to bed at once, and should be kept warm and have a dose of Nitrite of Amyl, which sometimes, if given early, aborts the paroxysm. As the attack will pass off without endangering life, the less done by drugging the better, especially as the host of astringent substances formerly recommended possess no power over the paroxysm. Chloride of Calcium so beneficial in ordinary hæmaturia is useless. Quinine is still employed in malarial hæmoglobinuria, and the question of its value is discussed under Blackwater Fever.

Arsenic is of little value during the attack, but like Iron its beneficial effects are obvious and unmistakable in the anæmic state which follows severe paroxysms. The hæmoglobinuria of Raynaud's disease is of the same nature as the ordinary paroxysmal type, and as it is usually brought on by exposure to chills and over-fatigue, warmth and rest in bed is the best palliative. Dry cupping or hot poultices to the loins are still recommended, but as the condition is not in any way due to renal congestion, this treatment is apparently irrational except in blackwater fever.

Preventive treatment will in all paroxysmal cases consist in removal to a warm equable climate during the winter months, when the patient's circumstances permit.

Eason has discovered a toxin in the blood which in the presence of cold attacks the red discs, but hæmolysis does not occur till the blood has become warmed again by circulating through the internal organs. As the disease is believed by many to be of syphilitic origin, Iodides may be administered between the attacks, but Mercury is seldom indicated unless signs of active syphilis should be present.

HÆMOPHILIA.

Preventive treatment in this congenital and hereditary disease is of vital importance. It consists in the avoidance of injuries, wounds, contusions, and abrasions all through life. No surgical cutting operation must ever be attempted in a subject suffering under this condition. Even vaccination must be performed with extreme care, as death has resulted when the scarifications were permitted to involve the deep layer of the true skin, and a fatal

issue has many times been reported after the skilful extraction of a diseased tooth. The general health of the so-called "bleeder" must be maintained at the highest standard, and as all athletic games in which any accident or rough play is likely to occur are to be avoided, the patient must make up for their absence by an open-air life, in which walking exercises, swimming, and boating form a part.

The disease is practically never seen in females, but is handed down always through the female line; hence the daughter of a bleeder, though immune herself, will be very liable to transmit the diathesis to her male children, and marriage under such circumstances is always to be discountenanced. The victim of the condition should be warned of his congenital weakness as soon as he comes to years of discretion in order that he may avoid as far as possible all danger.

When epistaxis or any breach of surface has occurred, or when blood has been poured out into a joint, the question of the administration of an internal hæmostatic at once arises. Chloride or Lactate of Calcium should be given freely by the mouth, and absolute rest in bed enjoined. The lime salt cannot be continuously employed as a preventive, because after saturation of the blood has been produced for any considerable time by a lime salt the coagulation time of the blood is delayed instead of being hastened. Inhalation of Oxygen and Thyroid feeding have proved useful in some cases, and the practitioners of a former generation believed in the efficacy of a combination of Perchloride of Iron and Chlorate of Potash internally. All astringents of the tannin group, ergot, lead, &c., are worthless. Yeast and Nucleinic Acid are recommended on theoretical grounds.

Epistaxis, which causes the greatest number of deaths in bleeders, must be promptly treated by gentle plugging with lint soaked in Adrenalin solution or by packing the nostril with dry Puff-Ball. It is inadvisable to give internally adrenalin or any other drug which raises the systemic pressure. A jet of CO₂ may be played into the nostril.

When the hæmorrhage proceeds from the cavity of a recently extracted tooth it should be plugged with a pledget of lint moistened with Adrenalin solution or Puff-Ball, and pressure continuously applied by bandaging the jaws over a pad of lint placed above the gap in the dental arch or a suitable temporary plate may be adjusted and worn till all danger has passed away.

At the earliest appearance of such hæmorrhages, precautions should be taken to make up for the loss of blood which has already occurred and is likely to continue. A large enema of Saline solution should be slowly injected into the rectum when the head of the patient has been lowered and the pelvis raised. 1 dr. of the lime salt may be advantageously combined with the saline, or Gelatin (20 per cent.) added to it.

In desperate cases the saline must be given hypodermically,

but never by the veins. By resorting early to the saline enema when this is retained the danger of hæmorrhage from the hypodermic puncture is avoided. If puncture be necessary, Gelatin should be injected along with the saline, and the gelatin may be also given by the mouth. In some cases a full dose (6 drs.) of Antidiphtheritic Serum given hypodermically has proved valuable.

Wounds must be treated by Adrenalin solution, ligatures being inadmissible. Corrosive styptics and the cautery likewise should not be employed, as the bleeding after the separation of sloughs or eschars may prove more serious even than the original hæmorrhage. Pressure is the main remedy to be relied upon when the bleeding does not stop after the application of adrenalin, and it should always be employed in conjunction with it.

Only in the presence of impending death can blood transfusion be considered as justifiable.

When hæmorrhage occurs into a joint, the limb must be rendered quite immovable by splints, and ice or evaporating lotions applied and the absorption of the effused blood encouraged by pressure. Puncture of the joint should, when possible, be avoided, and a free incision never is justifiable.

HÆMOPTYSIS.

The cause of the bleeding should in all cases be determined and removed when possible, but unfortunately in the great majority of cases the condition is the result of tuberculous changes in the small bronchi or pulmonary tissue arising during the progress of phthisis, and the treatment must be merely symptomatic.

Absolute rest in bed is essential in all but trivial cases. The best position, as pointed out by Murray Leslie, is to keep the patient upon the affected side when this is already known to the physician by a previous examination. By this plan regurgitation of the blood into the bronchi of the sound lung is prevented. The shoulders may be raised, and most patients find this posture more comfortable than lying flat because it diminishes the tendency to cough. All avoidable mental excitement must be prevented. A calm assurance that the danger of suffocation is but a trifling one will do much to allay the feeling of apprehension which often keeps the heart action tumultuous and aggravates the hæmorrhagic process. A small hypodermic dose of Morphia often works wonders by acting in the same manner.

Speaking or using the voice in any way above a necessary whisper is to be prohibited. The room should be cool and well ventilated, and the bedclothes as light as the season will permit. Ice may be freely allowed in small quantities. It assuages thirst, which is always present, and it prevents the tickling cough when nothing is coming up; unnecessary cough is to be checked, as it raises temporarily the intrathoracic pressure, and thereby does harm, but if the cough centre is paralysed by a large dose of morphia asphyxia may result.

The diet should consist of liquid nourishment administered in small quantities at a time and quite cold; no advantage follows a dry biscuit diet, as recommended by some. Alcohol is as a rule contra-indicated. Gelatin in the form of a flavoured jelly is an ideal article of diet, and may be given freely.

The ice-bag may be applied to the chest or wetted towels containing pieces of ice between their folds may be placed in contact with the thoracic wall. More harm than good is got from this agent, since it is generally wrongly used. The continuous application of cold to the chest-wall will, after the expiration of less than 1 hour, cause a hyperæmia of the bronchial surface to replace the anæmic condition which soon follows after the ice has been first applied. This change increases the hæmorrhage, and if ice be used its application should be intermittent. Every $\frac{1}{2}$ hour the bag or towel should be removed in fat subjects, and every 20 minutes in thin ones, and the cold reapplied after the lapse of a similar period. An excellent routine, which the writer has carried out for many years, is to saturate the atmosphere of the sick-room with the vapour of Oil of Turpentine. Owing to the volatility of the drug this can rapidly be accomplished without appreciably elevating the temperature of the chamber by pouring the drug into a small basin partially filled with hot water, or the oil may be freely sprinkled upon pine sawdust or shavings. Its local hæmostatic action is especially useful in cases where the hæmorrhage is capillary, but it may be used in all forms of hæmoptysis, and can do no harm even when the bleeding is proceeding from a ruptured miliary aneurism in the wall of a phthisical cavity, since it usually also acts as a respiratory sedative and allays cough; moreover, its antiseptic action must not be lost sight of in a condition which threatens sometimes to infect a large portion of the entire pulmonary tract. Should the vapour appear to increase the coughing in a hypersensitive patient its use can be stopped.

Internal remedies are to be used with caution. Mention has already been made of the value of a small hypodermic dose of Morphia to allay mental excitement. This also prevents unnecessary coughing, but the dose should not be repeated. The good effect can be maintained by small doses of Heroin when the cough is incessant.

Chloride or Lactate of Calcium is the only reliable internal hæmostatic, and 60 to 100 grs. should be at once given by the rectum or 30 grs. by the mouth every 2 hours. Tannin, Gallic Acid, Lead Salts, Alum, Ergot and other astringents are not only useless, but harmful. Drugs which increase the systemic pressure as digitalis, strophanthus, and adrenalin, only tend to increase the escape of the blood from the ruptured vessels, and should not be administered. In heart failure, when a cardiac tonic is indicated, Strychnine hypodermically may be given.

When the hæmorrhage is profuse and blood is being coughed up at very frequent intervals, the physician can only allay the mental excitement of the patient by so arranging his treatment that a small dose of the internal hæmostatic may be given every 15 or 30 minutes, as the sufferer feels that death may occur before the next dose of his remedy may become due when this is prescribed to be taken at long intervals.

Under such circumstances the following combination may be employed with advantage :

R. *Calcii Chloridi* *ʒiiss.*
 Heroin. Hydrochlor. *gr. ¼.*
 Tinct. Aconiti *℥xvj.*
 Acid. Hydrocyanici Dil. *℥xvj.*
 Aquæ Chloroformi *ʒviiij. Misce.*

Ft. mist. Signa.—"A tablespoonful to be given every 15 minutes whilst the hæmorrhage is severe."

The former generation of practitioners learned by observation the value of a rapid reduction of the blood-pressure, and they sometimes, as witnessed by the writer himself, did not hesitate to open a vein and let blood, which often instantly restrained the pulmonary bleeding. The same effect can be more safely achieved by causing the patient to inhale Nitrite of Amyl, and this agent should always have a trial in every case where the systemic pressure is above normal, or Nitroglycerin may be given by the mouth.

A smart saline purgative will act similarly, the only objection to its use being that it will compel the patient to alter his position as soon as it begins to purge, but this is usually a trivial contra-indication. Temporary ligatures applied to the limbs in order to prevent the return of their venous blood to the heart often act equally satisfactorily. Revulsant measures as a brisk counter-irritation of some part of the skin, or the use of a hot mustard-bath to the lower extremities often prove useful, and many practitioners resort to dry cupping of the chest.

The serious results of the loss of blood must be combated as the acute anæmia may result in a fatal syncope. A large enema of normal Saline with which Chloride of Calcium may be combined should be slowly injected, and failing its retention, or even when it stays up, the saline may be injected in several places hypodermically. Gelatin solution 5 to 10 per cent. may be safely combined with it, and in desperate cases the injection may be made into a vein. These agents afford all the benefits obtainable from blood transfusion.

Threatening asphyxia from regurgitation of blood into the main bronchus of the sound lung should be treated promptly

by artificial respiration ; little is to be expected from Oxygen inhalation when the cyanosis is due to such blocking.

The secondary anæmia is afterwards to be treated by Iron, prolonged rest and judicious feeding.

HÆMORRHAGE.

The treatment of all *internal* hæmorrhages may be carried out on the lines laid down on the preceding article on Hæmoptysis. When the bleeding is due to erosion or rupture of a vessel in the stomach, local hæmostatics and the agents mentioned under Hæmatemesis are admissible ; the question of surgical interference is discussed under Gastric Ulcer. Intestinal hæmorrhage is usually due to duodenal ulcer, and its treatment will be found detailed under its own subheading. Tuberculous ulceration of the bowel when causing severe hæmorrhage must be met by internal hæmostatics when laparotomy is contra-indicated. The hæmorrhage occurring during typhoid fever will be dealt with under the name of the primary disease. Hæmorrhage from the urinary tract has its treatment discussed in the article on Hæmaturia. Under Hæmophilia, Epistaxis, Synovitis, Hæmatocele, &c., the treatment of other forms of bleeding will be found. Hæmorrhage into the peritoneal cavity can only be treated by laparotomy and the surgical procedures indicated in each case.

The treatment of *external* hæmorrhage when this is severe will include the use of all the internal or constitutional remedies indicated in internal bleeding, viz., saline solution, gelatin solution, lime salts given by the rectum, veins, or by hypodermic injection together with such agents as temporary ligatures to the limbs, blood transfusion and remedies to combat shock.

Accidental external hæmorrhage must be promptly arrested by occlusion of the severed vessels, but as this is not always possible at the moment temporary procedures should be followed in emergencies.

Pressure applied by the fingers over a pad of lint is often sufficient to stop the bleeding for the time, and when long continued the mouth of the divided vessel may become sealed up by a clot, so that further interference may be unnecessary when the artery is a small one or where the severed vessel is a vein ; the elevation of the part materially assists in the control of the hæmorrhage.

In bleeding from a large vessel a tourniquet should be extemporised, whilst digital pressure is maintained over the trunk of the main vessel on its proximal side ; a bandage being loosely applied in the neighbourhood of the finger-tips, this may be tightly twisted by inserting a piece of stick so as to ligature the limb, a firm pad of lint being placed over the vessel as the fingers are withdrawn. Afterwards, as soon as instrumental aids are procurable, the wound should be opened up, thoroughly cleansed, and the vessel ligatured with silk or catgut, or its lumen may be closed by torsion or by applying forcipressure with a suitable

forceps. Should the artery or vein be only partially divided or wounded without being severed, it must be cut across and the vessel ligatured. When an artery has been severed in the middle of a wound, it will be necessary to ligature both its distal and proximal extremities.

Where the vessel cannot be easily isolated for ligaturing, acupressure may be employed by compressing it between the tissues and a hare-lip pin with a figure-of-eight ligature. Hæmorrhage from wounds of the scalp or mesentery may be controlled by simply involving the bleeding vessel in a stout suture which, when tied, will stop the flow of blood above the cut extremity.

The cautery at a dull red heat may be passed over the bleeding surface when several small vessels are spouting and these cannot be seized by forceps, but such a procedure prevents primary union.

Styptics are only to be used under similar circumstances, and Adrenalin solution is the one generally employed. Water at a temperature of 112° is a very efficient aseptic hæmostatic when directly applied to oozing surfaces. Puff Ball is also most efficacious, but it cannot be easily sterilised. A corrosive liquid like Perchloride of Iron should never be employed as a styptic to aseptic wounds, as it destroys the tissues and produces a superficial slough or eschar : it may, however, be advantageously used to plug the cavity from which a tooth has been extracted. As routine styptics for minor fresh wounds Friar's Balsam and rectified Oil of Turpentine are most convenient and reliable, being antiseptic in their action.

The prevention of primary hæmorrhage in surgical operations may be carried out by digital compression, the application of the tourniquet, Esmarch's bloodless method, or in some cases by the application of a ligature to the main vessel supplying the part as to the subclavian or external iliac arteries when amputation is to be performed at the shoulder or hip joint. This ligature may be a permanent or temporary one, or a clamp or steel skewer may be employed to compress the vessel. It is often possible in thin subjects completely to control the hæmorrhage in the lower extremities by powerfully curving the spine anteriorly with a firm object placed behind the vertebral spines, the patient's thighs being permitted to hang over the edge of the operating table as firm pressure is made on the abdominal aorta by the clenched hand of a reliable assistant, the artery being powerfully compressed against the prominent bodies of the lumbar vertebrae below the umbilical region. Minor operations may be sometimes rendered bloodless by the use of the infiltration anæsthesia method.

In secondary hæmorrhage the cause being almost invariably due to some septic change interfering with the reparative process in the occluded or ligatured vessels, the best routine procedure is to open up the wound, thoroughly cleanse it with a *hot* solution of an unirritating antiseptic solution, and plug it firmly with iodoform gauze. Should a large vessel be suspected to be leaking

the main vessel should be ligatured through a wound made under strict aseptic precautions at some distance above the site of the primary operation.

HÆMORRHAGE, POST-PARTUM—see Puerperal Hæmorrhages.

HÆMORRHOIDS.

The treatment may be either palliative or operative for both external and internal piles. In most instances palliative measures are preferable where the presence of the hæmorrhoids is causing little discomfort or loss of blood, and often such treatment by removing the primary cause permits the varicosity to shrivel or wither up.

Constipation must be sedulously guarded against, the bowels may require occasionally a brisk saline purge to unload the liver, but the physician should aim at the rational method of curing the constipation by securing a semi-solid or soft motion at least once daily. This can only be satisfactorily accomplished by small doses of laxatives as Aloes, or Cascara in combination with Nux Vomica as in the ordinary dinner pill. Much has been written in condemnation of aloes in the hæmorrhoidal condition; large doses certainly are injurious. When a *purgative* action is required, this drug should never be selected, but for the same reasons small doses are invaluable; they exercise a certain degree of stimulating or tonic action upon the muscular coat of the atonic veins which is highly beneficial. It should, therefore, never be administered even in small doses when the piles are inflamed. Confection of Senna, Sulphur or Compound Liquorice Powder, Stewed Prunes and pure Olive Oil are also excellent laxatives. The diet should be such as will not tend to cause portal congestion; high living, alcohol, and sedentary occupations or such as entail prolonged standing must be avoided, and cold or damp to the feet should be prevented by suitable clothing and foot-wear. The administration by the mouth of Ward's Paste (Confection of Pepper) is still a valued agent, and many retain a belief in the efficacy of Tar Pills. Local measures consist in extreme cleanliness, only the softest tissue paper should be gently used after defecation; the anal region should be sponged freely with cold water afterwards, and again before retiring to rest. A small enema of cold water is in many cases very beneficial, especially when a severe aching pain follows defecation where internal piles are present, which tend to prolapse; these should always be gently pushed up beyond the grasp of the sphincter. Any unirritating astringent ointment may be applied at the same time with the finger or an ointment introducer. The best routine application is the following:

R. *Ungt. Conii* ʒiss.

Ext. Hamamel. Liq. ʒj.

Liq. Carbonis Deterg. ℥xxx. *Misce.*

This will also effectually relieve any pruritus which may be present, and its astringent effect can be intensified by the addition of 10 grs. Persulphate of Iron, if hæmorrhage is troublesome. Gall and Opium Ointment alone or with the addition of Belladonna Extract, Hazeline or Calomel and Dilute Citrine Ointment, with 1 per cent. Cocaine are also good local applications.

Inflamed piles or what is commonly known as an attack of piles may be either external or internal. Their prevention will consist in the observance of the above-mentioned measures, especially by the exercise of a gentle pressure applied after defecation so as to prevent the mass of internal piles being strangulated by the sphincter. When this latter result has already occurred all attempts at reduction are painful and generally futile. Inflamed external piles obviously can never be pushed within the sphincter. As soon as the acute attack declares itself, the patient should be ordered to bed and a large enema of warm water slowly administered so as to thoroughly wash out the colon. The agonising pain is best relieved by hot fomentations or poultices smeared over with the Green Extract of Belladonna and sometimes by iced applications or a piece of smooth ice introduced within the sphincter.

Leeches to the margin of the anus always afford a considerable degree of relief, but anodyne suppositories or ointments are generally of little value owing to the tension of the parts. By such palliative measures the patient may be tided over his few days of suffering, after which it may be found that the piles have become obliterated through the formation of firm thrombi in their interior, or the strangulation caused by the pressure of the sphincter may have been sufficient to effect their permanent destruction.

It is as a rule unwise to operate upon internal piles when in the state of acute inflammation.

Many attacks of external piles are due to extravasation of blood caused by rupture of the dilated vein during defecation, the thrombus so distending the tissues as to cause intense agonising pain. Here the surgeon can give instant relief by freely incising the skin over the inflamed vein and turning out the clot. Such cases, if left alone, spontaneously resolve themselves and the hæmorrhoid disappears, but several days of severe suffering can be immediately cut short by one prompt incision of the thrombotic pile.

Severe hæmorrhage from internal piles is a clear indication for their removal, but in emergency the loss of blood must be stopped. Packing the rectum with ice or Puff Ball is advocated. Hæmostatic injections as Hazeline, Perchloride of Iron, Tannin, Hydrastis, Alum, &c., have given way to Adrenalin Chloride, a small quantity of which diluted with 4 times as much water should be injected beyond the sphincter. The speculum may be introduced and the cleansed bleeding-point swabbed over with the undiluted solution, or the actual or electro-cautery at a

dull red heat may be passed over its surface lightly in a linear manner; this latter procedure often effects a cure by forming an eschar under which the withered pile shrivels up. The old plan of applying concentrated Nitric Acid is seldom resorted to.

Unna's plan of treating all hæmorrhoids is to employ a 1 in 20 ointment of Chrysarobin, and others report favourably of a 1 gr. suppository of the same with Belladonna and Iodoform.

Surgical Treatment.—The removal of the hæmorrhoidal mass may be determined upon when palliative treatment has failed to relieve pain, prolapse and repeated hæmorrhages. The new method of injecting into each pile a few minims of a 10 to 20 per cent. solution of pure Carbolic Acid in glycerin and water is already passing out of fashion, and should only be resorted to when for any special reason the usual cutting or ligaturing operation is contra-indicated, as the resulting thrombosis has sometimes given rise to sepsis, abscesses and embolism. There is little to be said in favour of merely applying the cautery to the hæmorrhagic mass with the view of destroying it—a procedure which is associated with much pain in the case of external hæmorrhoids, and which is of little use in large internal piles.

Electrolysis is practised by a few who employ an ionisation of a zinc solution by the unipolar method, but at best the results are only palliative.

External piles should be removed only by the scissors, a ligature never being resorted to save when necessary to tie a spouting vessel, but the skin around the pile must not be ligatured. A drop or two of Cocaine solution may be injected into the base of each after thorough disinfection of the anal region, after which the piles are to be separately snipped off and the raw surface treated by Iodoform under a pad of dry lint to which pressure is applied by a suitable bandage. Care should be taken not to remove any skin unnecessarily, lest the anal opening might become contracted in calibre, but all tags and redundant folds of skin containing remnants of former hæmorrhoids should be snipped off at the same time.

Internal piles may be removed by ligaturing, by excision, by the use of the clamp and cautery, or by crushing.

The patient should have a free purge given two days before the operation, either castor oil or a saline which should be repeated upon the day previous to the morning of the operation. Some surgeons give castor oil for the first purge, and follow it up by a saline, no solid food being administered after. Early on the morning of the operation the colon must be thoroughly emptied by one or two large enemas. When the patient has been fully anæsthetised by Ether or Chloroform, the surgeon inserts both his thumbs well inside the anus, and slowly and steadily dilates the sphincter without tearing it. The hæmorrhoidal mass is then brought into view and within easy reach.

If the operation by *ligature*, which is the simplest and most

easily performed, is selected the surgeon proceeds to seize each hæmorrhoid separately with a pile forceps, and having snipped through with blunt-nosed scissors the mucous membrane around its base, a stout silk ligature is tightly applied so as to thoroughly strangulate the mass, care being taken that the silk is buried in the sulcus or groove made by the scissors in order to prevent slipping. The pile is then cut off, but not too close to the ligature, the ends of which may be left protruding from the anus. Large hæmorrhoids should be transfixed through the base by a sharp needle carrying a strong ligature in its eye, and the pedicle tied as tightly as possible before cutting off the distal portion of the pile. Small hæmorrhoids may be ligatured without cutting away any tissue, but the mucous membrane must always be snipped through before the ligature is applied, otherwise the latter is certain to slip. Each pile having been separately treated in the above manner, and any external ones removed by the scissors, a Morphia Suppository may be slipped through the relaxed sphincter, and a dry antiseptic dressing applied under a T-bandage before the patient is lifted back to his bed.

Upon the third morning he may have an oil enema or a dose of castor oil, which is to be repeated each day to prevent scybala forming as these are liable to interfere with the ligatures. The greatest care should be taken to keep the skin in the neighbourhood of the anus as clean as possible by douching with carbolic lotion, and dredging with Boracic Powder, or lubricating with Boracic Ointment. The ligatures may be expected to come away in about 10 days, after which the patient may be permitted to sit up. Should there be much swelling of the parts or retention of urine, a hot sitz-bath may be administered which will often prevent the necessity of catheterisation.

The operation of *excision* is carried out by seizing each pile separately with the forceps and cutting it off close to the mucous membrane, the lips of the incision in which are then to be sutured with catgut. The best operation is that devised and carried out by A. B. Mitchell, the description of which, written by himself for the last edition of the present work, is here reproduced. The mucous membrane is washed with a 1 in 1,000 Perchloride of Mercury solution: the sphincter is dilated. One of the piles is caught in a pair of forceps and pulled well down. A long narrow-bladed forceps (Kocher's artery forceps answers admirably) is then applied to the base of the pile, so as to include a vertical fold of mucous membrane 1 to 2 inches long. The pile having been pulled well into the grip of the forceps, the blades are clamped and the projecting pile removed with scissors. A needle threaded with catgut is passed through the fold of mucous membrane just above the forceps, and the end of the catgut is firmly tied so as to include the artery running into the pile. The upper end being thus fixed a continuous suture is applied loosely *around* the blades of the forceps. The blades are then

removed, and the suture rapidly tightened and secured at the lower end. Each pile is treated similarly, and when the operation, which takes from about 15 to 20 minutes, is completed, 4 to 6 vertical lines of sutures remain within the rectum. The operation is bloodless. No attempt is made to insure subsequent inaction of the bowels. The patient is up and about at the end of a week.

The *clamp and cautery* method is carried out after the same preliminaries have been gone through as for the ligature operation. Each pile or separate hæmorrhoidal mass is seized with forceps and a clamp is applied to its base or pedicle; the pile is then cut off, and the cautery at a dull red heat is laid on the wounded surface, which is to be thoroughly seared before withdrawing the clamp. The after-treatment is identical with that following ligature.

A *crushing* clamp is employed by some surgeons to do away with the necessity of the cautery. The base of the pile is squeezed or crushed in the clamp, and when this is forcibly screwed tight the pile is excised, and after a few minutes of this severe pressure the crusher is unfastened and no hæmorrhage follows.

Sir Charles Ball's method of operating combines several of the details of the ligature, excision and crushing operations. He transfixes the crushed pedicle with a stout ligature and ties each half tightly, bringing the ends of the ligature round so as to strangulate the entire pedicle, including the half already tied, after having secured for the ligature a subcutaneous hold on the revolved skin of the anal canal by a previous dissection.

Whitehead's operation consists in excision of the entire pile area by removing a ring of mucous membrane, including the hæmorrhoids, the border of the excised wound being brought down and sutured to the anal margin. The danger of the operation when performed by unskilled hands lies in the liability to contraction of the anal aperture and to injury of the sphincter in the dissection process.

In the above operative procedures a complete relaxation of the sphincter is of primary importance, and Porter has shown that by the injection of Barker's Eucaïne and Adrenalin solution previous to general anæsthesia the greatest degree of patency may be obtained without permitting the chloroform or ether narcosis to be pushed to a high degree of insensibility. Some surgeons have operated under spinal anæsthesia successfully.

Boas has introduced a new operative method based upon the principles which often effect a natural cure in spontaneously prolapsed piles. The patient is made to strain forcibly, so as to cause prolapse of the hæmorrhoidal masses, after which a Bier's suction apparatus is applied till a sufficient degree of œdema of the anal skin and tissues is produced as will prevent reduction. The prolapsed and strangulated mass is then allowed to shrivel, which process is usually completed in about a fortnight.

HÆMOTHORAX.

In medical cases the treatment of the primary disease causing the hæmorrhage will require to be first considered, but since this is usually beyond the immediate reach of art the management of the case must be conducted upon purely symptomatic or palliative lines. The patient should be placed in bed, and have ice freely applied to the affected side; he should lie upon this side unless where this interferes with the repeated applications of the ice. Food should only be given in quantities just capable of maintaining life, and the utmost quiet and freedom from excitement must be maintained. A moderate dose of Opium or a small hypodermic of Morphia may be administered with advantage, as in cases of hæmoptysis.

Internal Hæmostatics.—The Chloride or Lactate of Calcium should be given by the mouth or rectum, and the reduction of the general blood-pressure effected by inhalations of Nitrite of Amyl or by Nitroglycerin, followed up by a brisk saline purge. The practitioners of a former generation under such circumstances did not hesitate to open a vein freely in order to relieve the tension in the internal bleeding vessel—a practice which is seldom or never ventured upon at the present time, but when the heart is embarrassed in traumatic cases life can only be saved by opening a large vein.

Where a large amount of blood has already been poured out, and a condition of acute anæmia has supervened, this must be met by saline injections hypodermically by the rectum or by the veins. At the same time the sudden compression of the lung and displacement of the heart will require prompt relief. A puncture by the exploring needle will reveal whether the effused blood remains still liquid, in which case the aspirator may be cautiously employed or a trochar and canula used, but should clots exist there may be no other course open but to make a free incision as in empyema, and provide for suitable drainage.

Hæmothorax due to injuries is usually the result of a fractured rib perforating the lung or wounding an intercostal artery. When the internal hæmorrhage is caused by a penetrating chest-wound the bleeding comes from the internal mammary or an intercostal artery, and the vessel must be ligatured. The ligature of an intercostal artery is often a difficult procedure requiring free enlargement of the wound and even resection of a portion of a rib. Where such an operation is inadmissible owing to the state of collapse often following such injuries, three alternatives are available: A curved needle bearing a stout ligature may be passed round the rib, so as to include the bone and intercostal artery in its embrace; after tightly tying the silk or catgut the hæmorrhage may be controlled, pressure forceps may be employed as a temporary clamp and left *in situ*, or Desault's expedient may be resorted to. This is carried out after sterilization of the wound by laying a piece of stout gauze or lint over it

and pushing the centre of the lint inwards till a cul-de-sac is formed, which is next packed firmly with gauze; when the lint is pulled outwards the plug exerts its pressure upon the wounded artery, which is compressed against the bone or interior of the chest wall. The lint is finally fixed by a pad, and kept stretched by fastening it to the thoracic wall with strips of plaster.

Should the hæmorrhage proceed from the internal mammary, this vessel may be tied without much difficulty in the second or third intercostal space.

Where the hæmorrhage is coming from a ruptured lung, one or more ribs will require resection to expose the bleeding viscus, which should be sutured with its visceral layer of pleura.

Blood effusions are to be distinguished from true hæmothorax, and should be treated by the methods described under Pleuritis. Where hæmothorax is the result of tuberculous ulceration near the surface of the lung, air and pleuritic fluid will usually accompany the effusion of blood, and the treatment should be that of Pneumothorax or Empyema.

The recent introduction of the method of operation under differential pressure enables the surgeon to open the thorax and suture the wound in the lung (see under Lung Wounds).

HAIR, Diseases of.

The treatment of the various diseases affecting the growth and nutrition of the hair follicles and hair shafts will be found under their respective headings as Baldness, Dandriff, Tinea, Sycosis, Trichorrexia Nodosa, &c.

Greyness or whiteness of the hair (canities) is in the great majority of cases a senile change, but it may appear at a comparatively early age after sudden grief, terror, nerve exhaustion, or the influence of neuralgia, especially when there is a strong hereditary predisposition. In these premature forms there may be a hope that under treatment which removes the primary cause the disposition of pigment may recur in newly formed hairs. This has been known in some instances to be assisted by nerve tonics like strychnine and arsenic when combined with hypodermic injections of Pilocarpine or Tincture of Jaborandi by the mouth.

For the senile form nothing is of use save the last refuge—a suitable hair dye applied under the hands of a skilful hairdresser, which remedy the physician will be wise to discountenance.

For the rare condition first described by Walter Smith, and known as *monilethrix* or beaded hair, when of congenital or hereditary origin, nothing can be done. In the acquired form the best routine will be nerve tonics and the application of Cantharidine preparations and electrical stimulation to increase the amount of blood going to the hair follicles.

Tinea Nodosa and Leptothrix, the former affecting the hairs of the beard and the latter involving those of the scrotum and

axilla, are apparently of parasitic origin, and differ from *trichorhexis nodosa* (which see). They are best treated by cutting the hair close and applying any mild antiparasitic ointment or lotion, as Ungt. Hyd. Ammon. or a 1 in 500 Perchloride of Mercury solution.

Hirsuties.—The removal of superfluous hairs is best conducted by the use of electrolysis guided by a skilled and patient operator. An almost immediate effect may be produced by careful management of the X rays, but the hairs invariably grow again. Depilatories may cause serious blemishing, and mere epilation is followed usually by a more vigorous growth, and the same holds true of shaving, which, however, may be the only possible method of palliating the unsightly thick growth of dark hair which sometimes flourishes on the upper lip of females who suffer from menstrual irregularities. The deformity may be considerably lessened when the dark hairs are of a slender or downy kind by continually bleaching them with Peroxide of Hydrogen.

When the hairs are sparse and thick, each may be pulled out, and a fine needle thrust into the follicle through the minute opening left after epilation. The needle, if of steel, is to be connected with the negative pole of a suitable galvanic battery, whilst the positive is placed upon the skin of the cheek or held in the hand. Graham Little has pointed out that staining may result from ionisation of the iron when the steel needle is attached to the positive pole. A needle of gold or platinum is preferable, as it may be attached to either pole. When the current is turned on, the hair bulb is destroyed. Some operators prefer to insert the needle alongside the shaft of the hair without epilating, but this latter insures the freer entry of the needle into the follicle. The point need not be inserted further than $\frac{1}{16}$ inch.

A return of the growth only occurs where the root has escaped destruction, when the operation will require repetition. If skillfully performed, the electrolysis leaves a mark so trifling as to be almost invisible, and there is not much pain; but the treatment is most tedious, as not more than at the most sixty hairs can be removed at a single sitting of 1 hour's duration. Pirie suggests that the use of needles be discarded, and that a piece of fine wire, such as is used for clearing the hollow needle used for hypodermic purposes, should be employed, which can be easily insulated to within $\frac{1}{16}$ inch from its point by shellac.

HANGING—See Asphyxia.

HARE LIP.

The time most suitable for the performance of operations on congenital malformations of the lips and mouth has been discussed in the article on Cleft Palate. As a rule it may be said that the best routine is to operate as early as possible in robust infants. About the end of the sixth or eighth week is the best

time in most cases, but when suction is rendered impossible it may be necessary to operate on hare lip within the first 10 days after birth. When cleft palate complicates the deformity, the lip should be first operated on. The child should be nourished by careful spoon feeding, so as to be placed in the most favourable condition of health to withstand the strain of the operation and the subsequent restraint necessary to secure success.

The arms of the infant may be comfortably secured to its sides after chloroform anæsthesia by winding a towel round the thorax as the patient is supported on the lap of a steady nurse, whilst the head rests upon the knees of the surgeon.

The lip must be thoroughly separated from its bony attachments by cutting and gently tearing through the reflected mucous membrane in the neighbourhood of the cleft and beyond it well up into the nostril and cheek before any attempt is made at paring the edges of the cleft. After the soft parts are found to glide freely over the alveoli and the margins can be brought together without undue tension a fine, sharp scalpel is used to pare off and completely detach the edge of one side of the cleft, starting at its apex, till the red margin of the lip is reached, when the incision is prolonged clean through the blunt angle and for a short distance along the free margin of the lip by turning the cutting edge of the blade outwards. The remaining edge of the cleft is similarly pared till the lower angle of the cleft is reached, when the knife is again turned outwards to continue the incision along the red margin of the lip without detaching the dissected paring, which is then stitched to the opposite blunt angle so as to fill in the notch which would otherwise be left in the free margin of the lip. This Λ -shaped incision, when the parts are brought together in a mild degree of hare-lip deformity, becomes a diamond, and when sutured in its vertical axis leaves a straight line.

The margins of the wound are sutured with two fine silver-wire or silkworm-gut stitches passed deeply, but not made to include the mucous membrane, the intervening portions of the wound being stitched with horsehair sutures passed superficially. Lane inserts his deep sutures from the mucous surface, but does not include the skin in them. This plan permits these stitches to remain *in situ* for several days, whilst the deep sutures applied from the cutaneous surface must be removed after 2 or 3 days in order to avoid permanent marking. The horsehair ones may be left for a week or 10 days before removal. A small pad of gauze is applied over the lip and covered with Iodised Collodion. This latter is kept in position by a firm band of rubber plaster applied after the cheeks are pressed together in order to avoid traction on the margins of the wound when the child cries. The plaster should be renewed at intervals during the first 2 or 3 weeks after the removal of the sutures to prevent stretching of the cicatrix. The mouth should be kept aseptic by the use of Glycerin of Borax, and the child fed by a spoon for the first few days.

The operation of simple double hare lip is carried out on the same lines, and if there be no bone displacement both clefts can be dealt with at the same time.

Should there be much projection of the premaxillary process forwards, this a few days before the operation may be pressed forcibly backwards by forceps or by the thumb to the extent of causing its detachment from the bony septum, which is preferable to the plan of cutting out a V-shaped piece of the latter at the operation, whereby the blood-supply to the premaxillary bone may be destroyed. The prolabium should be pared and the skin left on its central part, the flaps being utilised in closing the cleft and forming a columna.

HAY FEVER OR HAY ASTHMA.

Recent researches have demonstrated that the local symptoms of this complaint are not produced by the mere mechanical irritation of the pollen grains of grass plants as was formerly believed. Dunbar has extracted a toxic proteid from the pollen which, when applied in solution to the nostril and conjunctiva, produces the typical coryza, &c. This, however, only occurs in susceptible individuals in whom there exists a hypersensitive condition of these membranes; in others there is a distinct neurosis present like that causing a true asthmatic seizure.

If the neurosis or the hypersensitive condition can be corrected by suitable treatment, the pollen will prove harmless, or should the latter be robbed by any means of its irritating properties the hay fever will be speedily cured.

The underlying neurosis may be treated as in asthma and other allied conditions by improving the general health, administering nervine tonics like Arsenic, Valerianates, Zinc Salts and Strychnine, &c., but as a rule little is to be expected from these measures alone, even when the mucosa is found to be normal in appearance.

The treatment of the hypersensitive area gives much more reliable results. As hypertrophic rhinitis or a chronic congestive state of the nasal mucosa is often present, a radical attempt to remedy the local condition is often successful. The erectile tissue should be so cauterised as to form an adherent cicatrix which will permanently bind down the mucosa to the periosteum, and at the same time insure the complete destruction of the hypersensitive areas existing in the nasal membrane. By cocaine solution the thickened mucous lining is rendered insensible, after which, with a fine blade or platinum point, a deep groove is burned with the galvano-cautery along the entire length of the inferior turbinated bone. In severe cases there should be no hesitation in removing both inferior turbinate bones. Sometimes the condition is completely removed by applying the cautery to the most sensitive part of the nasal septum (the tubercle), as in cauterisation for asthma. As in other

paroxysmal neuroses the prospects of a cure are most hopeful when the affection is treated in this manner early in its career before repeated seasonal attacks have produced the markedly recurring tendency to attacks supervening upon the slightest irritation.

Recently Yonge has advocated resection of both nasal nerves when the cauterly fails. A host of remedial agents have been employed to produce the same result without resorting to the cauterly, but their effects are very temporary or evanescent. Foremost amongst these are Cocaine and Adrenalin. A 2 per cent. solution of the former or a 1 in 3,000 solution of adrenalin may be sprayed into the nostrils, or a liquid of double these strengths may be painted over the mucous membrane with a brush, one or other or both of these drugs being used. Menthol dissolved in 10 parts of pure paraffin is also useful, and the addition of Camphor increases its efficacy, but these applications should never be persisted in for more than a brief period. The more severe method of treatment employed by the late Sir Andrew Clarke may be tried; this consists in swabbing the interior of the nose and the naso-pharynx by a mixture consisting of 1 gr. Corrosive Sublimate and 120 grs. Hydrochloride of Quinine dissolved in 2 oz. Glycerin of Carbolic Acid. The application should be made through the nostrils with a large camel's-hair brush.

A 1 in 50 solution of Nitrate of Silver, 1 in 1,000 Perchloride of Mercury, 5 to 10 per cent. Protargol, 5 to 20 per cent. Argyrol and Resorcin 5 to 10 per cent., have all been advocated.

With the use of the above local applications Antipyrine may be given in full doses during the acute stages and Arsenic and Iodides in the chronic stages.

The most satisfactory routine palliative treatment for the various types of hay asthma, whether of the congestive, hyper-æsthetic, or truly neurotic form, is the local use of the serum introduced by Dunbar. This is supplied under the name of "Pollantin," and is prepared by treating the horse with repeated hypodermic injections of triturates of various pollens till the serum of the animal becomes charged with an antitoxin. The serum is dropped into the eye, painted over the nasal mucosa, or the dried and powdered preparation is used in the form of snuff: it must never be administered like the other sera by hypodermic injection. The serum appears to neutralise the toxic proteid in the pollen which causes the symptoms of the disease.

Preventive treatment of individuals whose time and means enable them to escape from the cause of the disease is always worth consideration. Any locality where the pollen of grasses and other plants exists in abundance should be avoided. City in-door life, a sea voyage, or residence in a high altitude, or a sojourn at a seaside spot, destitute of much vegetation, may enable the victim of hay fever to stave off the attacks. Heiligo-

land is recommended by Lambert Lack as a temporary resort. Respirators, goggles, veils and plugs of cotton-wool in the nostrils may in some cases mitigate the amount of coryza and sneezing by preventing the admission of the pollen grains, but, as a rule, their use causes acute discomfort, and as preventive remedies they are generally unsuccessful, and the same may be said of inhalations of all kinds.

There can be no doubt about the value of the nasal douche both as a preventive and palliative, and an adjunct to other treatment. By regular flushing out of the nasal cavity and the naso-pharynx the pollen grains are washed away and the irritative effect of their toxin prevented or minimised. Before the season when the grasses are flowering the douche when carefully used will relieve the chronic congestive condition of the nasal mucosa, which is such a strong factor in many cases, and in the type of the affection where a true neurosis like the asthmatic exists, the douche can do no harm. The best form for routine use is to prescribe a powder of equal parts of Sodium Bicarbonate, Sodium Chloride and Borax, a saltspoonful of which dissolved in a wineglassful of tepid water may be used to cleanse the membrane of all mucous discharge and crusts. The writer in these cases abandons the usual nasal douche apparatus and directs the patient to fill the hollow of his hand with the liquid, which is strongly sniffed up through the nostrils and brought out by the mouth and expectorated, 2 or 3 oz. being used on each occasion 3 or 4 times a day.

The use of Cocaine is to be discountenanced ; it produces in the long-run an abnormally sensitive and relaxed condition of the mucosa, which perpetuates the mischief indefinitely, though in emergencies it may be safely used for a short period, as Chloroform inhalation may be employed in the emergency of an acute attack. Some authorities employ a 1 in 5,000 Perchloride of Mercury solution for cleansing the nostrils, and Carbolic Acid 1 in 100 is decidedly valuable when used as above directed. Dry snuffs as those containing gum, bismuth, &c., are always not only valueless, but hurtful, as they cake upon the mucous membrane and act like crusts. Astringent powders like alum and tannin are still more objectionable.

Where a true asthmatic seizure appears to supervene upon the attack of hay fever, the burning of any of the usual Stramonium and Nitre compounds may be resorted to if Nitrite of Amyl fails to cut short the paroxysm.

HEADACHE.

This symptom should never be treated as such ; the first step in the management of a patient whose chief complaint is " headache " must be to find out the cause of the cephalalgia and treat this cause. If, as is usual, the headache be but a symptom of a primary disease as a specific fever, kidney affection, meningitis,

migraine, &c., the treatment of the headache will be found detailed under the name of the disorder which gives rise to it. Nevertheless, a brief résumé may be here given of the general principles which should guide the physician in the treatment of a case where headache is a prominent symptom calling for relief.

The classification of headaches given by the author in his "Practice and Theory of Medicine," vol. i., p. 548, is a convenient one, though any attempt at a rigid classification breaks down because any two or more factors may be operating in the same patient at the same time—a fact which cannot be forgotten in the treatment.

Headache due to *organic* disease of the brain and its membranes, of the cranial bones or of the scalp, as a general rule cannot be freely treated by the most reliable of all pain-relievers—Opium. This drug is contra-indicated in acute inflammatory conditions such as exist in the various types of meningitis, cerebral abscesses, sinus thrombosis and cerebritis. The headache of these affections calls for large doses of Bromides with Antipyrine, Phenacetin, or Aspirin, and the application of the ice-cap to the forehead and hairy scalp. Agents which relieve the increased intracranial pressure, as purgatives, counter-irritation to the nucha, spinal puncture, &c., may be also useful, and in some cases trephining will be indicated. Of non-febrile cases cerebral syphilis and tumours of various kinds supply the greater proportion; these should be treated upon the above-mentioned lines.

In every syphilitic case, whether of the nature of tumour, arteritis or meningeal involvement, Iodides should be given, boldly commencing with at least a dose of 20 grs., which should be increased to double or treble this amount three or four times a day combined with Bromides. If the syphilis be of comparatively recent origin, Mercury should be also given.

The headache caused by non-syphilitic tumours is often markedly relieved by the bromide and iodide combination, but Morphia hypodermically may be cautiously tried when the pain becomes unbearable. To render the life of the patient tolerable, trephining with the removal of a large disc of bone is clearly indicated, even when there is no hope of the operation permitting of the excision of the growth. Exostoses, depressed spiculæ of bone and enlarged Pacchionian bodies causing intense headache must be treated by operative procedures.

Severe rheumatic fibrositis of the scalp or pericranium causing diffuse headache will be best relieved by 15-gr. doses of Aspirin or 30 grs. Salicylate of Sodium combined with Iodides in full doses. *Muscular* headache is described by Rose, and is closely allied, if not identical with, the last-named variety; it is due to muscular hypertonus, which affects the circulation in the jugular veins, and he recommends massage as the only reliable agent, each muscle being dealt with separately.

Functional headaches so called are those which do not depend upon organic brain or cranial trouble, the most important types of which are the *Toxæmic*, *Congestive*, *Anæmic*, *Neurasthenic*, *Reflex*, *Gastric* and *Hæmic* or *Lymphatic*.

Toxæmia accounts perhaps for the majority of all headaches coming under the notice of the physician. It includes the cephalalgia of Bright's disease, all fevers, gout, lithæmia and a host of conditions in which some retained excrementitious substance often of bacterial origin is circulating through the cerebral cortex; probably migraine has a toxic origin. The principle of treatment for this form of cephalalgia should be eliminatory; the bowels, skin and kidneys require stimulation in order to hasten the excretion of the poison, and as this is also a clear indication for the relief of the primary disease, the use of saline purgatives, diuretics and diaphoretics is resorted to. Palliatives for the symptomatic headache must also be employed. Thus in fever Morphia may be safely employed to relieve the pain in the head which keeps the patient awake, and during the day small doses of any of the new analgesics may be given at short intervals. The best example of this type of headache is seen in influenza, where a few grains of Antipyrine every 2 or 3 hours completely relieve the intense cephalalgia, especially when combined with Caffeine, which effectually neutralises any depressant action of the drug on the heart; the cold pack, by reducing the temperature, tends to counteract the influence of the toxin on the brain centres when any tendency towards hyperpyrexia is present. If throbbing of the temporal arteries is noticeable, the ice-cap may be employed, as in the congestive type, and a sinapism often does good when applied to the cervical spines. Compression of the temporal arteries also occasionally affords some degree of relief.

The *congestive* headache is often also of toxic origin; brisk purgatives must be administered to reduce the systemic pressure, and vaso-dilators like Amyl and Glonoin may be administered. Cold applications or leeches to the head and revulsants to the extremities as a hot mustard foot-bath and a sinapism to the nucha are clearly indicated. When the result of plethora, dietetic measures with massage and exercises and mercurials followed by a brisk saline purge 2 or 3 times a week should be resorted to. In cirrhotic kidney the headache may be entirely congestive; oftener it is both toxic and due to increased blood-pressure, and will yield to purgation and vaso-dilators.

Anæmic headache yields to the opposite treatment. Dietetic methods which improve the quality and increase the quantity of the blood should be employed. Iron stands first amongst drugs, and it may be regarded as a food in this condition. Often the anæmic headache is distinctly of a neuralgic nature, and excellent results may be obtained by combining Arsenic and Phosphorus with the iron. Organic phosphorus such as exists

in Sanatogen is very useful. Change of scene and climatic environment will contribute to improve metabolism in such cases.

Neurasthenic headache is often most severe and intractable, and can only be relieved by a prolonged rest from all mental strain and excessive muscular exertion. Like hysterical cephalalgia, it will yield to Weir-Mitchell treatment, but as a rule in these types as well as in the anæmic form the coal-tar derivatives—antipyrine, phenacetin—should not be used except in emergencies.

Reflex headaches can only be diagnosed after patient and exhaustive investigation, and their treatment cannot be undertaken with any prospect of success except by the use of remedial agents which remove the exciting cause.

Eye-strain due to ocular troubles, the chief of which is hypermetropic astigmatism, affords the most typical example of this type of cephalalgia; it usually disappears promptly when the errors of refraction are skilfully corrected by appropriate glasses. Weakness of the ciliary muscle and of the globe rotators, iritis and glaucoma also cause headache, which can only be relieved by removing the primary cause. The reflex cephalalgia of the cyclist or motorist and the "academy" headache are of the same nature, and must be treated on the same principle—*i.e.*, by the removal of the strain.

Nasal diseases and affections of the sinuses of the frontal, ethmoidal, sphenoidal or maxillary bones or disease of the turbinates and the presence of adenoids all may produce severe reflex headache, which yields speedily on removal of these exciting causes. As a carious tooth may be the origin of true aching inside the cranium without itself being the seat of pain or even of tenderness, so all the above conditions may likewise remain quiescent.

Vansant recommends the flushing of the nasal accessory sinuses with a stream of hot dry air in all cases of frontal headache. In frontal sinus headache the nostril should be swabbed with Cocaine solution and flushed out with Boric solution, and finally insufflated with Ferrier's snuff.

Gastric headache is common; it should, however, hardly be classified under its own name, since this form of cephalalgia is either reflex or toxic, being most frequently of the latter type, in which case the brain is irritated by poisonous products formed during retarded digestion. The treatment should obviously be that of the primary dyspepsia, and should be carried out on the lines suitable for the management of various neuroses or structural stomach diseases. In most cases an emetic or lavage will afford speedy relief.

Hæmic cephalalgia, or so-called lymphatic headache, has been long overlooked, having been supposed to be of neurasthenic or hysterical origin. This type is found to be commonly associated with chilblains and an erythematous or urticarial condition of the

skin, accompanied by slight œdema of the legs. The headache is most persistent and often very severe. It is due to deficiency of lime salts in the blood, and yields steadily to the free administration of Chloride or Lactate of Calcium, which should be persevered with in interrupted courses of 14 days' duration.

Under the heading of Megrim will be found discussed the list of analgesic drugs and other remedial agents, such as electricity and setons, employed for the relief of headache, most of which are suitable for the palliation of every form of cephalalgia when the primary cause is undiscoverable or irremovable.

HEAD INJURIES.

As the most serious results may follow injuries of the skull or brain which at first show no signs of grave significance, the surgeon must be wise in considering every case as potentially a grave one even when no external mark is left by the injury. It is better to regard every case as if a fracture of the vault or base were present than to treat these injuries as trivial because no symptoms immediately follow.

A point of vital importance as regards diagnosis and treatment is to investigate the nature and intensity of the force which has caused the injury. Serious middle meningeal artery hæmorrhage may follow localised blows sometimes; the diffused force of a heavy object falling upon the skull is, however, almost certain to cause serious concussion or laceration of the brain substance even when no scalp wound or a trifling abrasion is only visible.

When symptoms of concussion are present the case must be treated by the most absolute rest possible, as detailed in the articles on Concussion of the Brain and Collapse. The patient should be placed upon his back in a silent and darkened room, with his head slightly raised and a cold lotion applied to the scalp. As soon as symptoms and signs of reaction appear the ice-cap should be employed and any violence of reaction controlled by leeching the temples, or by venesection. An active purgative—1 min. Croton Oil with 5 grs. Calomel—should be placed upon the base of the tongue.

The pathology of concussion must be differentiated from that of shock or collapse, in which latter the chief condition is one of exhaustion (not paralysis) of the vaso-motor centres. To treat cerebral concussion as shock or collapse by the injection of saline solution and strychnine, adrenalin, &c., would be to increase the danger of intracranial hæmorrhage. The temptation "to do something" must be resisted by the surgeon when the best practice is obviously one of waiting and watching.

Rest, quiet and freedom from all excitement must be maintained till after the disappearance of every sign and symptom of reaction, and for a week or two more should any evidence of cerebral irritation supervene. The diet should consist at first of a few spoonfuls of diluted milk, which may afterwards be more

freely permitted, but animal food, even beef tea, must be prohibited, and alcohol should never be allowed. Restlessness should not be relieved by opium, but Bromides may be given in combination with small doses of Antipyrine should headache be troublesome.

When simple fracture of the vault complicates the case the less surgical interference the better; compound fracture should be thoroughly disinfected and the scalp wound enlarged if necessary. Depressed fractures should be treated by elevation or removal of loose spiculæ, and even when no symptoms of compression are present the consensus of opinion is in favour of trephining with the view of forestalling the advent of meningitis, epilepsy, mental weakness, &c., even in most cases where there is no scalp wound but where the depression is marked. In children operative procedures may be more safely postponed, as in them spontaneous elevation of frontal depressed fractures is far from rare. In punctured fractures the routine use of the trephine is a good practice. Fractures of the base of the skull are best treated by absolute and prolonged rest. Should signs of compression supervene, trephining may be resorted to in the temporal region to permit of the evacuation of the serous or blood-stained effusion. Spinal puncture has been advocated, but it is not free from danger. When rupture of the tympanum is present care should be taken to prevent sepsis by syringing with an antiseptic solution, after which the meatus should be loosely plugged with antiseptic gauze. Similar precautions are necessary when the nasal and pharyngeal mucous surfaces are lacerated, in which cases antiseptic sprays must be constantly employed to disinfect the naso-pharynx and nasal cavities.

Warren advises trephining in basal fractures with the view of providing drainage; he drills the cribriform plate and trephines above the auditory meatus or over the occiput, in order to drain the anterior, middle, or posterior fossa, according to the indications present regarding the seat of injury.

Hæmorrhage from the middle meningeal artery, which may not show itself till after the elapse of some hours or even days, must be promptly met by trephining over the anterior inferior angle of the parietal or behind the external ear. If the case comes under observation when the compression of the brain is first showing itself, Murphy advocates ligature of the external carotid artery, in order to avoid trephining. This will immediately control the internal maxillary, from which the middle meningeal vessel springs, and avoid the great difficulty of ligaturing the branches of the middle meningeal vessel in the cranium.

In cases of head injury caused by a fall or by a blow from a large heavy object the general brain contusion or laceration may cause a fatal collapse. Surgical measures are seldom indicated in these cases, but should the patient survive the initial concussion or shock, and compression or encephalitis supervene,

trephining may be indicated for the evacuation of pus clots, or for sinus injury.

For the condition known as Cerebral Irritation liable to supervene when there has been severe contusion or laceration of the frontal region, there is nothing but prolonged rest of body and mind in a dully lighted room. The greatest difficulty sometimes will be found to be in the feeding. After large doses of Bromides the rubber tube may be tried, but this should be avoided when possible.

HEART, Atrophy of.

This is a natural sequence to wasting diseases of a chronic type, and the treatment of the primary affection when this is within the range of possibility is clearly the only resource left to the physician. The condition of atrophy characterised by pigmentary degeneration and known as brown atrophy is usually evidence of senile changes which are for the most part beyond the reach of drugs. Rest is theoretically indicated in proportion to the dyspnoea and other urgent symptoms, but prolonged rest will eventually tend to hasten the degenerative process. The best routine will therefore be to prescribe a moderate degree of rest combined with general massage, and a diet as far as is practicable free from farinaceous material which should be replaced by a liberal amount of red meat, symptoms being treated as they arise.

The atrophy of the left ventricle which follows mitral stenosis does not call for active interference; the wasted muscle always responds when by skilful management the disturbed circulation is improved and natural hypertrophy of the auricle sets in, which increases the amount of blood sent into the wasted left ventricle.

HEARTBURN—see Gastric Neuroses.

HEART—Dilatation of.

Cardiac dilatation in the majority of instances is the last phenomenon winding up the slow progress of failing compensation when hypertrophy has been gradually giving way to increase in the capacity of the chambers of the heart from failing nutrition. Its treatment, therefore, is identical with the management of the last stages of valvular disease.

Many cases, however, coming under the notice of the physician are characterised by a sudden onset with alarming symptoms of embarrassed circulation occurring in subjects whose valvular affection has been undetected, or has remained quiescent till some severe muscular exertion has demonstrated that the reserve force of the heart was unequal to meet the sudden demand made upon it. Such cases should be treated as instances of the following:

Heart Strain.—This is liable to follow prolonged muscular exertion in a patient during the convalescent stage after recovery from any serious wasting disease or fever, and is frequently met with after influenza and typhus fever, in which affections

the muscular fibres of the ventricles are weakened by the action of the toxins of these diseases. Under the strain of some exertion the muscle being unable to contract efficiently blood accumulates in the ventricle and the condition of *acute* dilatation supervenes. This occurs in otherwise healthy individuals who, not being in training, undertake a muscular feat formerly accomplished with comparative ease, as a mountain climb or a long cycle run at the commencement of the spring season.

The indications for treatment are clear, absolute rest in the horizontal position is imperative in order to reduce the tax upon the ventricles to a minimum. In very acute cases with great pulmonary embarrassment the volume of the venous blood in the body calls for reduction which can only be promptly effected by freely opening a large vein in order to relieve the engorgement of the right side of the heart. In less urgent cases a strong saline purgative preceded by a dose of Blue Pill will effect the same result and deplete the portal system.

Combined with rest the careful exhibition of Cardiac Tonics is also clearly indicated both in the sudden dilatation occurring in healthy hearts and in those where old valvular impediments have previously existed. Strychnine can alone be depended upon to meet requirements which are urgent, and to obtain its best results the drug must be administered hypodermically in a dose of $\frac{1}{20}$ to $\frac{1}{10}$ gr.

The following is a good routine combination of remedies for use when the most urgent symptoms have been relieved :

R. *Tinct. Strophanthi* ʒij.
 Tinct. Nucis Vomicae ʒij.
 Spt. Amm. Aromat. ʒj.
 Aquæ Chloroformi ad ʒviij. *Misce.*
Ft. mist. Cpt. ʒss. ex aqua ter die.

At a later stage Schott-Nauheim treatment by baths and resisted movements is invaluable.

HEART, Fatty and Fibroid Degeneration of.

The acute fatty degeneration of the heart which supervenes in such affections as typhus fever, pneumonia, diphtheria, influenza, acute rheumatism, and phosphorus poisoning as a rule calls for little special treatment save what is clearly indicated for the management of the primary affection. The degenerative change passes away in young subjects under prolonged rest, which latter is essential in order to prevent the occurrence of acute dilatation of the heart, so liable to occur on any exertion.

The present article deals with the treatment of the form of degeneration which supervenes in elderly subjects usually as part of a general senile arterial change, the type of which, though

mainly fatty, is also nearly always more or less associated with the replacement of the muscular fibres by fibrous tissue. The term "cardio-sclerosis" defines this affection more correctly than the usual names of either fatty, fibroid or chronic myocarditis, since the degenerative process is of a compound or mixed nature.

The condition being also often the final result of or sequel to old and repeated rheumatic inflammation, the preventive treatment resolves itself into the judicious management of the valvular lesions which often accompany it. By judicious rest and dietetic treatment the stage of failing compensation may be long postponed and the tendency towards cicatricial and fatty degeneration minimised.

Once the signs and symptoms of cardiac degeneration have obviously manifested themselves, the probability is that the coronary arteries are already diseased and there is no hope of acting upon the altered muscular fibres, but life may be prolonged and the symptoms palliated by such measures as will increase the reserve force of the fibres which have still escaped attack. Everything which interferes with normal metabolism and all undue strain upon the weakened muscular tissue must be avoided.

The diet should be rich in nitrogenous material; starchy, fatty and saccharine materials must be used sparingly. Alcohol, save when specially indicated for the relief of symptoms, and tobacco and strong tea or coffee should be avoided. Almost as important as the nature of the food is its quantity and the distribution of the meals. Whilst gluttony is to be forbidden, the number of the meals should be increased, at least four being administered at intervals of not more than four hours each in the day. In this way the late heavy dinner or supper is done away with and a short rest after each meal instituted. As much time as possible should be spent in the open air; walking upon the level is the ideal form of muscular exercise, rising ground being avoided when possible, and negotiated with caution when unavoidable.

Many patients suffering from cardio-sclerosis succumb finally to some sudden and unguarded act of exertion as in a brief rush to catch a train or keep an appointment. The ascent of steep stairs when unavoidable should be always made by placing both feet upon each step before the ascent of the next one is attempted, and when this habit becomes acquired such exercise becomes beneficial, as it is impossible for the patient to hasten or tax his heart much more than in level walking. Golf may be permitted in most cases.

Worry, business pressure, creative mental work and all emotional strain must be given up; the even, quiet, uneventful life suitable for the victims of angina pectoris being substituted for the previous busy existence.

Sleep is of vital importance as insisted upon by Mackenzie, who recommends Bromides, when restlessness is present and Chloral when the nights are disturbed by attacks of dis-

tressful breathing; Paraldehyde is, however, a drug always to be preferred to any other narcotic in cardiac degeneration when an hypnotic is indicated. A short walk immediately before lying down is the best of all sleep producers for patients who are still able to move about all day. Constipation should never be permitted; the bearing down associated with the passage of a constipated motion is not a trivial danger.

General massage is clearly indicated in patients whose embarrassed breathing prevents muscular exercise, and though Nauheim treatment may be valuable in the early stages, it is dangerous once the breathing becomes difficult. The routine indulgence in douches, spongings, towelling and baths which the life of leisure tends to foster in invalids and which is often urged by the physician not infrequently does more harm than good. The hot and the Turkish bath should be forbidden, and the writer considers the cold plunge bath even more objectionable.

As some cardiac dilatation, anginal symptoms or palpitation are liable to arise at any time, the patient should have a few Trinitrin tablets or Amyl capsules in his pocket, and the following carminative may be left in his hands for use in emergencies, or the mixture on p. 430 can be employed:

R. *Tinct. Zinber. Fort.* $\bar{3}v$.

Tinct. Belladonnæ $\bar{3}j$.

Spt. Ammon. Aromat. $\bar{3}ij$.

Spt. Ætheris Nitrosi ad $\bar{3}ij$. *Misce.*

Ft. mist. Cpt. $\bar{5}j$. *ex* $\bar{3}j$. *aquæ dyspnœa urgente.*

Severe attacks of syncope or dyspnœa will require more active treatment; the patient should be immediately placed in the horizontal position, Ammonia or Nitrite of Amyl applied to the nostrils, and if unconsciousness has occurred a dash of water may be thrown upon the face.

Strychnine hypodermically is the only available cardiac stimulant in such cases, and it should be given in full doses $\frac{1}{20}$ to $\frac{1}{10}$ gr. Many physicians believe in $\frac{1}{100}$ gr. Atropine given in the same manner; both drugs may be given together. Where dyspnœa and cyanosis are prominent Oxygen inhalations may be employed.

Cardiac tonics have a very narrow range of usefulness in fatty degeneration; they possess no influence on the degenerated fibres and digitalis, owing to its powerful action on the walls of the small vessels, may so increase the peripheral resistance as to rupture the left ventricle or cause a fatal dilatation of the chambers of the heart. It should, therefore, never be given in this condition unless in cases where valvular disease is also present with dropsy and much previous hypertrophic changes, and then its use must be carefully watched and corrected by vaso-dilators. Strophanthus is less objectionable.

Strychnine, however, may always safely be given as a routine to assist the tone in the unaffected muscular fibres, and one of the best possible combinations is to give the drug with Iron and Quinine as in drachm-doses of Easton's Syrup. Short courses of Sodium Iodide appear to be the only method by which the degenerative process itself can be in any way checked or modified by drugs ; its action is inscrutable, but its beneficial effects are unmistakable, especially in those cases of mixed fibroid and fatty degeneration which are associated with general arterial sclerosis and cardiac pain. Phosphorus and Arsenic are recommended, but since both these drugs will undoubtedly produce fatty degeneration of the cardiac muscular fibre when given for long periods or in full doses, it is therefore wiser to regard them as agents which may be productive of evil. It is, however, probable that the organic phosphorus such as is available in Sanatogen may be useful.

The treatment of the attacks of paroxysmal bradycardia (Stokes-Adams Syndrome) which are liable to occur in cardio-sclerosis owing to involvement of the bundle of His causing *heart block* can only be carried out as for syncope. Digitalis is especially dangerous in this condition, as Mackenzie has shown that the administration of the drug may bring about an attack of heart block.

Cheyne-Stokes respiration is not a rare phenomenon, and it may be associated with heart block ; it is believed to be due to exhaustion of the respiratory centre. Though many agents have been suggested and tried for the removal of this symptom, none have any specific action. Morphia should be given when the apnœic stage is causing great restlessness and air hunger ; the combination of a small dose of Strychnine with the hypodermic dose of Morphia is advantageous from several points of view ; a little relief may be obtained from Oxygen inhalation.

Fatty infiltration must be differentiated from fatty degeneration ; its early recognition and treatment will prevent the accumulation of adipose tissue in such quantities as will cause pressure and subsequent degeneration of the muscular fibres. The treatment is that of the *obesity* of which it is but a local manifestation. A carefully regulated dietary, with Oertel's methods, open-air life, &c., and in some cases Thyroid feeding, should be prescribed (see under Obesity). At a later stage the general lines of treatment should follow those of fatty degeneration, care being always maintained that exercises should never be pushed to the extent of possibly causing acute dilatation of the heart.

HEART, Functional Affections of.

The departure from the normal cardiac action in hearts in which no structural or organic lesion exists may show itself in the form of any of the following cardiac motor neuroses : Arrhythmia, Bradycardia or Tachycardia. The purely sensory neuroses

are Pseudo-angina and Cardialgia and various degrees of sensation of oppression, hyperæsthesia and discomfort. The most common type of functional disturbance is Palpitation, in which neurosis both the motor and sensory mechanisms are disturbed.

It must always be kept in mind that the symptoms of each of the above abnormal conditions may be frequently due also to organic heart disease, and no step in their treatment can be considered as a safe one till the diagnosis is made clear by the exclusion of all structural lesions. Bearing on this point the advice of Balfour is a practical one; he lays stress upon the importance of observing the effect of exertion, if this does not increase the palpitation or other disturbance the case may safely be regarded as a functional one, and the calm assurance of this decision goes a long way in the successful treatment of the neurosis.

The treatment of *arrhythmia*, which term includes all functional forms of irregularity of rhythm and intermittence, consists mainly if not entirely of the removal of the primary exciting cause. This may be tobacco, excessive tea-drinking, sexual excesses, the unskilful administration of drugs like aconite and digitalis, emotional activity, dyspepsia, &c. Rest is not usually necessary in the absence of organic disease, but the disturbances of rhythm which occur in neurasthenia and after toxic doses of digitalis, and aconite and following influenza demand absolute rest till after all symptoms of cardiac weakness have disappeared. When of long standing or if due to individual peculiarity, intermittence may be left untreated by drugs. Where the arrhythmia or intermittence appears to be part of a general neurosis as in young hysterical or neurasthenic patients, the underlying neurotic condition will require treatment, and in some cases a Weir-Mitchell course may be indicated. The arrhythmia which characterises the *irritable heart of young persons* is always accompanied by palpitation and yields to rest.

In every case the condition of the digestive tract should be investigated, and any tendency towards the accumulation of flatus corrected by a suitable diet in which the amount of carbohydrates will require to be diminished. Constipation must be avoided; by keeping the bowels regular and the liver unloaded intestinal flatus may be reduced. Carminatives such as a dose of *Ol. Menthæ Pip.*, *Ginger* or *Sal Volatile* occasionally are beneficial (see the formula on p. 430).

Heart tonics are only indicated when any symptoms of cardiac asthenia are present and the dose of these should always be a small one. Strychnine in every case save in markedly hysterical patients is beneficial, and the best routine combination is 30 to 60 mins. of Easton's syrup which may be conveniently administered in the tabloid form in combination with $\frac{1}{8}$ gr. *Ext. of Strophanthus*.

Bradycardia.—When abnormal slowness of the pulse is not due to individual idiosyncrasy, it is usually either the result of

toxic influences or organic heart disease of the degenerative type. The treatment will consist in the removal of the cause, and as discussed in the article on Bradycardia, the main reliance is to be placed upon eliminatory measures employed with the view of hastening the excretion of the poison from the blood. Strictly speaking bradycardia is seldom if ever of the nature of a true cardiac neurosis, the slowing of the pulse being nearly always the direct result of the depressing action of some toxin produced in the body as in gout, uræmia, jaundice and diphtheria, or of a poison like tobacco, muscarine, lead, digitalis, &c., which irritates the vagus or depresses the accelerators of the heart. When due to organic disease of the heart more or less arrhythmia is present, or the affection recognised as paroxysmal bradycardia or Stokes-Adam's syndrome demonstrates itself, which condition must be treated on the same lines as syncope, by absolute rest in the horizontal position.

Tachycardia.—Mackenzie regards all cases of rapid heart in which the normal rhythm is maintained as examples of palpitation, and restricts the term "paroxysmal tachycardia" to those due to nodal rhythm, in which condition the ventricle starts the contraction, the auricle contracting during the ventricular systole. The pathology of this neurosis is not, however, fully understood, hence it would be idle to state that the cause should be sought out and removed, but owing to the general resemblance between the quick pulse of Graves's disease and that of the ordinary paroxysmal tachycardia, the suspicion is justified that some toxin (probably manufactured in the body) is the causal agent. This view if accepted gives an indication for treatment which should in the first place be directed to keeping the gastric and intestinal tracts in the healthiest possible condition. Laxatives or occasional purgatives and a wisely selected dietary are undoubtedly valuable preventives of an attack.

As in a migrainous subject any strong mental emotion or worry may precipitate a severe attack of cephalalgia, so in the tachycardiac neurosis a mental effort of unusual severity may be followed by a severe paroxysm of rapid heart, and the writer has witnessed this result most frequently in subjects who have submitted themselves to severe restraint during acute annoyances. In the same manner the constantly rapid heart of chronic alcoholism may be induced to become paroxysmally intensified by emotional disturbances. Every subject liable to attacks of tachycardia which are believed to arise independent of organic disease should endeavour to avoid all mental or emotional disturbances. His occupation, if it necessarily exposes him to such, should be changed, and he should endeavour to lead the quiet life sketched under the heading of Angina Pectoris.

During the attack, rest in the horizontal position is clearly indicated; the administration of heart tonics in order to slow the pulse is futile. Many devices have been followed by patients

who have discovered for themselves some means of calming the heart's action, such as compression of the chest, powerfully exercised by the pressure of the arms, compression of the abdomen, holding the breath after a deep inspiration, cold douching of the thoracic surface, &c.

In some instances a powerful carminative is useful, as a teaspoonful of Essence of Ginger or 5 to 10 mins. *Ol. Menthæ Pip.*; the writer has never seen alcohol do any good. The best routine is a full dose of Bromide of Sodium (45 grs.), repeated in 2 or 3 hours should the attack not have passed away. This is the best routine preventive treatment when the attacks show a tendency to return at short intervals; some patients appear to be almost immune whilst under the influence of the bromide.

In cases where there appears to be undue peripheral resistance 1 min. Nitroglycerin solution may be tried every 15 to 30 minutes, or Amyl Nitrite may be inhaled. Sansom treated all cases of tachycardia, whether paroxysmal or not, by the continuous current applied with one pole over the sternomastoid muscle and the other over the heart, and the writer has obtained excellent results from this agent by employing the current from 5 to 10 Leclanché elements for 15 minutes morning and evening.

Palpitation.—Using this term as including those cases of functional heart affection in which the patient is sensible of the increased rapidity of the cardiac action with more or less pain, discomfort or oppression, the cause should, if possible, be found out, and, if possible, removed. Dyspepsia is a common cause; the accumulated flatus pressing upon the diaphragm sets up a rapid action of the heart, but how far the production of some toxic substance operating on the nervous mechanism is also a factor becomes a difficult problem. The same remark applies to intestinal dyspepsia still more forcibly. Carminatives are often most valuable, the expulsion of gastric flatus usually being followed by considerable or total relief. A combination of antispasmodics like the following may be tried:

R. *Tinct. Zingiber. Fort.* ʒiv.
 Olei Menthæ Pip. ʒj.
 Æther. Sulphuric. ʒij.
 Spirit. Camphoræ ʒiij.
 Tinct. Card. Co. ad ʒiiij. *Misce.*

Ft. mistura. *Cpt.* ʒj. *ex* ʒj. *aquæ omni semihora.*

In very severe attacks an emetic may be necessary in order to speedily empty the stomach of its toxic contents.

Sometimes a whiff of Chloroform acts very rapidly, but this agent should never be resorted to unless in severe emergencies and when the physician is certain that the palpitation is not due to organic cardiac disease, in which condition it must be regarded

as evidence of serious weakness of the muscular walls struggling against some suddenly increased peripheral resistance. If the suspicion of this latter condition exists, Nitrite of Amyl or Nitroglycerin may be tried, but sedatives or cardiac depressants like aconite, veratrum viride and chloral must be avoided, though a hypodermic dose of Morphia may be administered in conjunction with Alcohol by the mouth.

Attacks of palpitation, the result of the abuse of tobacco, tea, alcohol and coffee soon cease to reappear after stopping the exciting cause; the same is true of the seizures following sexual excesses and emotional disturbances.

A not unusual cause of severe attacks of palpitation is one already dwelt upon under Dyspepsia and Gastric Neuroses, where a neurotic subject acquires the habit of wind-sucking in some post-dyspeptic condition. As soon as the physician convinces such a patient of the mechanical explanation of his flatulence the flatulence and palpitation usually disappear rapidly and completely.

As the tumultuous action of the heart in all cases of palpitation becomes much intensified by the dread of the patient, the calm assurance by the physician of the absence of any danger often acts more promptly than any other remedial agent.

In the intervals between the attacks, as in all other forms of cardiac neurosis, the treatment must be directed to the alimentary canal and to the general hygiene. Diet must be so regulated as to prevent gastric disturbances upon the lines laid down under Dyspepsia, not only as regards the nature and amount of food, but also due attention must be paid to the regularity of the times of meals, mastication and the necessary after-rest. Constipation is to be prevented and an occasional purgative administered. Exercise and mental work must be fairly proportioned; all worry, brain-fag, emotional and sexual excitement should be guarded against and a life free from high pressure maintained.

Of drugs, the less these are employed the better: much discrimination should be exercised regarding cardiac tonics. Small doses of Digitalis or Strophanthus are often most valuable in steadying the action of the heart and improving its tone, but the amounts of these drugs necessary in the failing compensation of valvular disease generally do harm in purely functional affections. The best routine is a combination of Digitalis, Strychnine and Bromides or Iodides, as in the following:

R. *Strychninæ Hydrobrom.* gr. j.
 Acid. Hydrobromid. Dil. ʒij.
 Tinct. Digitalis ʒij.
 Tinct. Belladonnæ ʒij.
 Infus. Aurantii ad ʒviiij. *Misce.*

Fiat. mistura. Capiat ʒij. *bis in die ex aqua.*

In the palpitation of hysterical subjects strychnine, as a rule, should be avoided and the necessary moral and educational methods carried out. Weir-Mitchell and isolation treatment may be necessary in aggravated instances where the underlying neurosis continues to act as a disturbing factor on the cardiac mechanism.

The treatment of the *sensory* cardiac neuroses, including Pseudo-angina, is to be carried out on the same lines as those indicated for palpitation. Cardialgia may be further relieved by local sedatives, the best of which is a Belladonna Plaster worn over the cardiac region. Immediate relief may sometimes be obtained during the attack by applying a large sinapism. Where this fails, blistering a small area near to the apex or in the aortic region may prove useful, especially in hysterical subjects. Iodide of Sodium in 10-gr. doses combined with double this amount of Bromide is often a most valuable agent in subduing cardiac pain, both of functional and organic origin.

HEART, Hypertrophy of.

The intrinsic hypertrophy of the heart caused by valvular disease or adherent pericardium is a natural conservative process, and should not be interfered with. When the causes which lead to cardiac enlargement are extrinsic and removable the indications for treatment are obvious. The cause should be removed if possible or its effect upon the heart minimised by judicious treatment. This is equivalent to saying that the primary disease to which the cardiac hypertrophy is secondary should be treated. In cirrhotic kidney, for example, much may be done by a careful attention to dieting and to the functions of the skin and bowels, whereby the toxic products retained in the blood may be lessened by vicarious elimination. It is doubtful if any permanent good in these cases can be expected from attempts to reduce the general blood-pressure by the continuous employment of vasodilator drugs. Unquestionably the use of these agents is most valuable for the relief of attacks of distress which are caused by some suddenly increased tension such as is due to mental strain, emotion, excessive muscular action, chills, constipation, &c., which are liable from time to time to arise in patients suffering from cardiac hypertrophy the result of continuous high blood-pressure. In such cases Belladonna or Atropine in small doses is recommended, but the writer has never seen much benefit from it.

When the hypertrophy is the direct result of such pulmonary embarrassment as exists in emphysema, fibroid phthisis, &c., the treatment of secondary bronchitis or attacks of asthma by suitable measures is clearly indicated to prevent all undue demands upon the heart's action.

The hypertrophy of the heart caused by excessive muscular strain, whether the result of athletic exercises or laborious occu-

pation will gradually yield to moderate rest and a change in the individual's habits. The same result may be expected when the cardiac enlargement is due to increased peripheral resistance caused by the contamination of the blood by poisons like lead, tobacco or gout.

Whilst the treatment of hypertrophy of the heart as a symptom or sign by itself is unscientific and irrational, a further word may be said about the obvious error of prescribing cardiac sedatives like aconite, tartar emetic, &c., in compensatory hypertrophy when the cardiac action becomes tumultuous, irregular or painful. These symptoms should be regarded as evidence of threatening failure and not as proof of unnecessary force of ventricular contraction, and must be met by prompt rest and the judicious administration of heart tonics. In such cases Iodides are more clearly indicated than large doses of digitalis, as the systemic pressure is already high, and Strychnine in moderate amount may be safely combined with them.

HEART, Inflammatory Affections of.

The treatment of the acute diseases of inflammatory nature which involve the cardiac muscle, the endocardium and the pericardium will be found under their appropriate headings—Endocarditis and Pericarditis. In the article on Rheumatism the management of these complications will be also incidentally dealt with and the sequelæ which result from acute inflammation involving the delicate covering of the heart valves are discussed in the next article.

HEART, Valvular Diseases of.

Though these lesions are permanent and incurable, nevertheless the physician who possesses a sound knowledge of the dynamics of the circulation and of the pharmacological action of digitalis can approach the treatment of these grave affections with confidence that life may often be prolonged with comfort for years, even in patients whose urgent symptoms when first coming under observation only give promise of a short career of suffering.

Exclusive of the degenerative type of aortic disease, the valvular deformity may be regarded as always the result of an endocarditis which has arisen during an attack of acute rheumatism. Under Endocarditis the vital importance of *preventive* treatment has been already emphasised. Probably in every case of acute rheumatism some degree of endocardial mischief is always present, but only a comparatively small proportion of the sufferers develop signs of permanent valvular mischief. The majority of these are found in patients who have resumed active movement or returned to their ordinary avocation as soon as the arthritic symptoms of the disease have passed away. The value of Sibson's conclusions regarding the importance of a prolonged period of absolute rest in every case of rheumatic endo-

carditis is now appreciated by every physician as the only reliable method of preventing the supervention of permanent valvular deformity. During this rest treatment there are very good reasons for believing that Iodides assist materially in the absorption of proliferation caused by the inflammatory action in the delicate reticulum of the endocardial membrane reflected over the cardiac valves.

It is superfluous to dwell upon the importance of other obvious precautions necessary to maintain a condition of ideal health whilst the convalescing patient is gradually recovering from the effects of the endocardial inflammation. Dietetic and eliminatory measures, with abundance of fresh air and freedom from all mental worry or intellectual strain and of every factor liable to unduly raise the general systemic blood-pressure must be carefully considered. These precautions are even more necessary in cases where the injury to the valve structure has been already so severe as to offer a mechanical obstruction to the circulation, in which case they will materially assist nature in the establishment of the compensatory hypertrophy whereby the circulatory balance must be effected.

Rarely are cardiac tonics like digitalis indicated at this early stage; their routine administration is fraught with danger; by increasing blood-pressure they are very liable to cause strain upon the recently damaged valves. Should there be evidence of diminished tone in the cardiac muscle there is little objection to moderate doses of Strychnine combined with Iodides. A prolonged rest cure in these severe cases of valvular damage will not interfere with the rapidity with which compensation will become established; it probably hastens the process. This is proved by the amelioration of all the symptoms of cardiac pain, breathlessness and palpitation which sometimes supervene suddenly after a first severe attack of acute rheumatism in a patient who has resumed active exercises soon after his supposed recovery, rest in bed rapidly hastening compensatory changes.

Many cases of long-standing valvular disease first come under the notice of the physician whilst making a routine examination of a patient suffering from some other independent affection. The detection of an organic murmur with signs of hypertrophy of the walls of the heart, it must be clearly laid down, is no indication for administering cardiac tonics or for prescribing prolonged rest. The situation is one, however, requiring tact and sound judgment on the part of the physician as bearing upon the treatment of such a patient when the absence of all symptoms of failing compensation prove that nature has adjusted the balance perfectly. The question at once arises, Should the individual be informed of his condition? The answer must depend upon the knowledge which the physician possesses of the individual characteristics of the patient and of his own power of allaying any alarm which the revelation may create. Some neurotic and

timid individuals may receive such knowledge if imparted abruptly as a death warrant, their future life being haunted by the presence of an imminent danger which is certain to react injuriously upon the state of compensation. As a rule, the calm assurance by the physician of the absence of any immediate danger meets the first requirement of the situation. The nature of the case may be explained fully, and general directions laid down for the regulation of the patient's life, habits, occupation, diet, exercise and general hygiene, exactly as these should be sketched out to every patient after recovery from an attack of severe rheumatic endocarditis in which the valves have been implicated. He should be informed that moderation in all things is essential to a prolonged career under such circumstances. Excess in alcohol and tobacco, sexual excitement, severe business high pressure, mental overstrain and worry, and prolonged severe muscular exertion should be avoided. A fair amount of muscular exercise is not only unobjectionable, but it is really essential, in order to keep the cardiac muscle in a healthy condition. The physician is more liable to err in limiting than in encouraging the necessary amount of exercise. Walking may safely be indulged in to any reasonable extent, especially upon level ground. Even mild gymnastic exercises are productive of good under ordinary restrictions. Short spurts of running, rowing, swimming, lifting heavy weights and violent quick movements which tax the reserve force of the heart severely must be avoided, since this reserve force, in perfect compensation, though sufficient to meet all ordinary requirements, is nevertheless always below the normal standard for such severe and sudden demands.

All measures likely to maintain a high standard of health should be advised, and a good liberal mixed diet prescribed, such as experience has proved to the patient to be most acceptable and sustaining. The writing out of a diet table for the subject of a valvular lesion in which compensation has taken place is a mistake. As far as possible the patient should be guided by his own instincts and experience in eating, avoiding much tea and indigestible substances likely to induce dyspeptic troubles.

Symptoms of failure in the cardiac muscular power must be carefully watched for; these are palpitation, cardialgia, breathlessness or cough on exertion and slight œdema of the ankles.

Rest.—The presence of the above symptoms is an imperative indication for absolute rest in the horizontal position in bed. This first step in the treatment of failing compensation is, in the great majority of cases when taken early, sufficient to dispel all discomfort, as the heart is usually enabled by the change of position alone to perform its functions without obvious embarrassment. Rest of mind is equally important, worry always increases the cardiac irritability and robs the ventricles of their repose by quickening the pulse-rate.

Diet.—The patient during the period of enforced bodily and

mental repose obviously cannot be permitted to indulge in the same dietary as if he were actively moving about, hence some restrictions are necessary, but the diet should be as highly nutritious and nourishing as possible. Liquid foods as concentrated meat extracts, strong beef soups and milk are admissible in such quantities as can be negotiated by his digestive organs. As more or less passive congestion of his gastric mucosa and liver is probably present, solids and farinaceous material must at first be restricted, the chief place being given to easily digested liquid proteids with slight amount of fats. After a few days, fish, chicken and game may be freely permitted, and as the patient ultimately begins to move about he should gradually return to his ordinary diet, which as before stated is better not to be a stereotyped one, the chief point not being lost sight of—*i.e.*, that farinaceous materials should be as a rule restricted and a rich nitrogenous regimen freely permitted. Cases of acute failure of compensation may require rectal feeding as the gastric functions are always more or less disturbed, and this affords a good reason for never placing these patients upon a cut-and-dry written-out diet table, which invariably tends to aggravate the dyspepsia. In order to give the congested stomach rest Leube's nutrient enema may be resorted to for several days. This is readily prepared by beating up in a mortar $1\frac{1}{2}$ oz. minced muscular fibre with $\frac{1}{2}$ oz. chopped pancreas freed from fat, adding enough tepid water to make the mixture of the consistence of thin cream ; this amount may be injected every six hours. Sansom successfully employed an enema consisting of 1 oz. Cod-Liver Oil shaken up in a bottle with 2 oz. warmed milk. 5 oz. of a mixture of thick oatmeal gruel and warm milk may be fully peptonised by the addition of 1 dr. liquor pancreaticus and a pinch of bicarbonate of soda, and injected every 4 to 6 hours. Where there is any rectal irritability nutrient suppositories may be employed to supplement the stomach feeding. In no case should feeding by the stomach be given up entirely during the rectal alimentation unless in the presence of continual vomiting.

A dry diet has been much advocated ; the late Sir Andrew Clarke insisted upon its value in mitral stenosis, and it was an important part of the Oertel treatment for failing compensation when combined with mountain climbing. Oertel's dietary was so arranged that the total food for 24 hours consisted of $5\frac{1}{2}$ oz. albumin, 1 oz. fat, 3 oz. carbohydrates and 35 oz. water, but his system of treatment has been practically abandoned, though it served a valuable purpose in directing attention to the extent of the evils which an indiscriminate use of the rest cure produced. Mackenzie emphasises the importance of oral digestion in failing heart power ; he states that the guiding principle should be the selection of tempting food which requires mastication, with little fluid and that chiefly milk given in small quantity and at fairly frequent intervals, the kind of food being that which the patient

likes as long as it does not disagree with him. He warns the physician not to prescribe a dietary suitable to himself and to bear in mind that what disagrees with him may agree with his patient. The quantity of food which the patient can chew is often a good guide to the amount required, and he enters a protest against the pouring in of beef tea and other easily eliminated fluids, and against predigested foods. The value of a salt-free dietary in dropsical cases has been already discussed in the article on Bright's Disease.

Sleep.—Of even more importance than rest and diet in the treatment of the failing compensation of valvular disease is the necessity for securing a sufficient amount of refreshing sleep; Mackenzie's dictum must be regarded as a truism: "If the patient does not get sufficient sleep he will never get well." When sleep does not follow upon the removal of body discomfort and the cessation of all mental activity or worry, hypnotics must be resorted to. Under Insomnia the relative merits of these agents will be discussed; the writer considers that in the condition under present consideration the safest sleep producer is Alcohol in one fairly large dose at bed-time. Unfortunately in those accustomed to its daily use it soon loses its hypnotic power. Next in value and the safest of all the hypnotics is Paraldehyde in 60 to 90 min. doses with a little alcohol. Opium is mainly objectionable from its influence upon the stomach and bowels, and constipation in every form of cardiac weakness is a complication to be avoided.

Drugs.—Digitalis stands easily first in the long list of drugs employed in the treatment of failing compensation, and its administration should be commenced as soon as the first symptoms of cardiac failure have sent the patient to bed. It is a common experience that the drug often fails to act beneficially till the horizontal position is maintained, hence the difficulty in appraising the virtues of the different factors in the treatment, and the question at once arises in the mind of the reflective observer how much of the beneficial result is due to rest and how much to the action of the drug? Probably in mild cases the influence of rest is the more important factor in the beneficial result, but there cannot be a doubt about the almost magical effect of the action of the drug in the failing compensation of old rheumatic hearts in which signs of dilatation have already appeared.

Mackenzie, whose clinical researches on the action of the drug have cleared up several difficult problems in connection with its physiological and therapeutic action, has demonstrated that the best results are only to be expected when obvious dilatation of the ventricles is present. This is in harmony with the experience of every physician who has been disappointed with its failure in the treatment of mitral stenosis, in which condition the left ventricle is not only not dilated but often atrophied.

The old view that the primary indication for the exhibition

of digitalis was *irregularity of the pulse* has received remarkable confirmation from the researches just referred to; thus Mackenzie has shown that the continuous irregularity characteristic of the failing compensation of old rheumatic valvular disease is due to nodal rhythm, the ventricular contraction preceding or synchronising with the auricular instead of succeeding it. In these cases the heart's contraction originates at the auriculo-ventricular node, and the jugular pulse is always of the ventricular type, and for the relief of this form of irregularity digitalis is a *specific*.

Much difference of opinion still exists regarding the best preparation of digitalis and the proper dose of the drug. The various special preparations are described and the actions of the different active principles of the drug are discussed in the author's work on *Materia Medica*, but he does not hesitate to always employ the B.P. *Tincture*; but Nativelle's granules of Crystallised Digitaline are very reliable. $7\frac{1}{2}$ mins. tincture 3 or 4 times a day answer most of the requirements in failing heart from valvular lesion; when extensive dropsy is present this dose may safely be doubled. The continuously irregular heart slows steadily under its action, and coupled beats become clearly marked in the tracing taken from the jugular vein; when these appear the dose should be lessened. With the slowing of the pulse, the area of cardiac dulness diminishes, the edge of the enlarged liver ascends in the abdomen till it may no longer be palpated, and the anasarca yields. These results, however, are only obtainable in old rheumatic hearts, and are not to be expected in the nodal rhythm occurring in the failing compensation following the degenerative type as in arterio-sclerosis. Mackenzie points out that where digitalis is prescribed for a patient with regular pulse, should the latter become irregular this is owing to a degree of heart block being induced.

The cardinal indications, therefore, for the administration of digitalis in valvular disease are irregularity of the pulse and dilatation of the previously hypertrophied heart with loss of tonicity. In carefully selected cases the results are little short of the miraculous, and as the action of the drug can be maintained for several months the patient may be thus kept alive in comfort till compensation has been entirely restored.

Though the risks of accumulation supervening during a course of digitalis treatment are much exaggerated in most textbooks on *Materia Medica*, nevertheless precautions should always be exercised when the drug is being administered in full doses. The total amount of urine secreted during the 24 hours should be measured, and as soon as any marked diminution in this occurs the drug must be withheld or the dose considerably lessened, and the patient warned to strictly maintain the horizontal posture in bed. The phenomenon of accumulation is believed to be due to sudden increase in the renal blood-pressure, which prevents elimination of the drug.

Anæmia being a common accompaniment of chronic valvular disease Iron is often indicated, and the incompatibility may be overcome by the addition of Phosphoric Acid as in the accompanying formula—

R. *Tinct. Digitalis* ℥iij.
 Tinct. Ferri Perchlor. ℥iij.
 Acid. Phosph. Dil. ℥ij.
 Aquæ Chlorof. ad ℥viiij. *Misce.*

Fiat mistura. Sumat ℥ij. *ex* ℥ij. *aquæ quater in die post cibos.*

Digitalis acts in a somewhat different manner according to the site of the valvular lesion ; its best effects are witnessed in *mitral regurgitation*, where by lengthening the diastole it gives a longer period for the ventricle's repose, during which time the muscular fibres are being supplied by their natural nourishment through the blood-stream. By increasing the tonicity and contractibility of the muscle the size of the mitral orifice is diminished (as loss of tonicity causes the ring of muscular substance which supports the valve to dilate during diastole), the ventricle is more perfectly emptied during systole, and thus dilatation of its cavity is minimised. By its similar tonic action upon the right ventricle, it enables it to overcome the increased resistance to the pulmonary circulation, and lung congestion disappears. The increased ventricular power thus gained, together with its tonic effect upon the vessels, reduces the pressure in the venous system, and dissipates the general congestion of organs and dropsy. The arterial pressure rises, and the pulse slows whilst it gains in force and regularity, though Mackenzie has demonstrated that, contrary to the generally accepted view, all the beneficial action of the drug is usually obtained without any marked increase in the general blood-pressure.

In *mitral obstruction* digitalis is often most disappointing ; this is what should be expected from a study of the action of the drug and of the pathology of the lesion. In mitral stenosis the amount of muscular substance in the auricle being small dilatation always predominates over hypertrophy, and when compensation breaks down there is but a small amount of muscle for the digitalis to act upon. By lengthening diastole, however, it sometimes occurs that a fuller supply of blood is sent into the ventricle through the narrowed slit, and by increasing the tone and contractile power of the right ventricle when the secondary hypertrophy of this chamber has commenced to fail it may also effect much. The small amount of work required of the left ventricle in this disease leads to its wasting, and hence when the final breakdown occurs digitalis has little power in increasing the force of

this chamber. Moreover, for some reason not clearly known digitalis very frequently cannot be tolerated in uncomplicated mitral stenosis; the writer suspects that the explanation of this may be that the progressive cicatricial change in the valve has already directly invaded the auriculo-ventricular bundle in these cases.

Aortic obstruction seldom calls for treatment unless when complicated with regurgitation, as in all other valvular lesions digitalis should never be given till symptoms of failing compensation begin to show themselves, but more mischief results from its premature administration in aortic disease than in mitral affections. In aortic obstruction the presence of some passing emotional strain may set up violent palpitation because of the enormous hypertrophy, and such symptoms if mistaken for those of heart failure and treated by digitalis are gravely increased. (Aconite or cardiac sedatives are then indicated in small doses.) Whilst in the failing compensation of mitral regurgitation digitalis may be safely given even long after compensation has been perfectly restored, the case is different in aortic obstruction; the drug should be given only whilst the cardiac failure is obvious, since owing to the great mass of muscle in the hypertrophied left ventricle there is danger of rupture of peripheral vessels should the ventricle be pushed by full doses of digitalis to put forth all its power.

In *simple aortic regurgitation* it is commonly held that digitalis may do serious mischief by prolonging the diastolic period, since during the pause, as Brunton has forcibly put it, the arterial system is open at both ends, the blood flowing onwards into the vessels and backwards through the imperfectly closed semilunar valves. There is, therefore, a great liability to syncope, and when the patient is under the full action of the drug he should maintain the horizontal position and use a urinal in bed.

Digitalis is unquestionably liable to do harm in this condition if given before any symptoms of heart failure manifest themselves, but in advanced cases, when the mitral valve is no longer able to bridge over the orifice of the greatly enlarged ventricle, relative insufficiency of this valve occurs and digitalis is imperatively demanded. Aortic regurgitation complicated with mitral valve disease likewise calls for treatment by digitalis as soon as symptoms of heart failure show themselves.

The value of digitalis in increasing the *tone* of the left ventricle is insisted upon by Allbutt independent of its power of increasing the *contractility*. The tonicity of the muscle is the effective safeguard against dilatation—*i.e.*, the power or virtue by which it preserves the mean diameter of its cavity—hence in aortic regurgitation, where the left ventricle is too capacious and its apex beat diffuse, provided the muscle is sound, digitalis will be very valuable. He gives one dose of the tincture (10 mins.) every second day, and watches the effect on the flow of urine and

the rate and rhythm of the pulse. If no harm results he continues the drug, but he thinks it never is indicated in this condition if the pulse keeps under 75. In a later stage, when the right side of the heart becomes secondarily involved, the drug is always beneficial.

On the other side of the question of the action of digitalis in aortic disease it must be mentioned that Fürbringer states he does not know of a single anatomical contra-indication to the use of the drug.

The cardiac tonics which have been of late years employed as substitutes or aids to Digitalis are—Strophanthus, Strychnine, Caffeine, Casca, Convallaria, Adonis Vernalis, Squill, Sparteine, Chloride of Barium, Senega and Cactus or Cereus Grandiflorus. As regards the value of these drugs compared with that of digitalis there is still difference of opinion. Mackenzie states that as regards strophanthus and squill he always found that when digitalis failed to act they always also failed, and that this conclusion was in striking agreement with the experience of his patients.

One may safely say that given a case of failing compensation from valvular disease of rheumatic origin the first cardiac tonic to be selected should invariably be digitalis. The serious and pressing nature of the malady does not justify one in experimenting with the different members of the cardiac tonic group whose actions have not been worked out either in the laboratory or at the bedside as fully as has been done with digitalis.

In the case of strophanthus, however, the action of this drug has been very fully investigated by Fraser, who has shown that its diurectic action is not so effective as that of digitalis because it influences the cardiac muscle more powerfully and does not contract the peripheral vessels to the same extent, the rise in arterial pressure being mainly due to its cardiac effects. He has shown that strophanthin in minimum lethal doses increases the strength and the duration of the systole and produces ultimate systolic standstill, the contraction passing into *rigor mortis*, but he points out that this increased duration of contraction, with lessening of the dilatation and capacity of the chambers, is not the action likely to be serviceable in weak conditions of the organ or in the existence of disabling lesions. By giving smaller doses he demonstrated *great* prolongation of the diastolic pause, though the interrupting systolic contractions were strong, and completely emptied the ventricles of their large accumulation of blood.

Strophanthus possesses the advantage over digitalis that it has little, if any, cumulative action ; but it sometimes causes gastric and intestinal disturbances. It can, however, be given to great advantage in the intervals during which digitalis is suspended, and the writer finds it an excellent plan to give digitalis for two months, and after three days' pause to give strophanthus in

smaller doses, combined with Easton's Syrup for one month, when the digitalis may be again commenced. There appears to be no justification for the haphazard combination of both drugs administered at the same time as practised by some physicians.

A serious drawback to the value of strophanthus is the variability in the official tincture, which is said to be in an average sample about 10 times more lethal in its action than the same bulk of the B.P. tincture of digitalis, though the official doses are given in both cases as 5 to 15 mins. Some universally approved method of standardising these preparations is most necessary. It should, moreover, be remembered that the effects of strophanthus are always slower in manifesting themselves when the drug is employed in the ordinary therapeutic dose, which should rarely exceed 5 mins. of the tincture.

Caffeine has little to commend itself in cardiac failure, except that its diuretic action is sometimes more prompt than that of digitalis. Allbutt gives Merck's Pure Caffeine as a cardiac stimulant in aortic regurgitation where the pulse is slow and the heart flagging, and where digitalis is not admissible. When the evening or night dose is omitted there is little risk of insomnia, and it can be advantageously combined with digitalis or strophanthus. D.-Beaumetz pointed out that it is given in doses which are of little value, and he insisted that with the daily dose of half a drachm marvellous effects may be procured.

Convallaria may be regarded as a weak digitalis preparation, and like strophanthus may be given in mitral stenosis when digitalis is badly borne.

Sparteine is unreliable as a cardiac tonic, but its prompt diuretic action is often of value in extensive dropsy from mitral regurgitation, since 1 gr. of the sulphate may be given hypodermically and can be readily combined with strychnine.

Barium Chloride has fallen into disuse, but a sojourn at Llangammarch during the convalescent stage of cardiac compensation is recommended by some authorities; this spa contains $\frac{3}{4}$ gr. in each pint—the dose of the chloride should not exceed $\frac{1}{4}$ gr.

Cactina enjoys a very doubtful reputation, many observers denying it any cardiac tonic action whatever, but the pellets prepared from *C. mexicana*, containing $\frac{1}{50}$ gr., are apparently of some value.

Squill undoubtedly is a powerful cardiac tonic, but owing to its irritating action upon the stomach it is seldom employed alone. Its proper place in the therapeutics of heart failure is in combination with digitalis and mercury, as in Baly's or Guy's Pill, so effective in dropsy.

Strychnine is a drug of undoubted value; it may be placed next to digitalis because of its wide range of usefulness and of the rapidity of its action, though so high an authority as Mackenzie states that he carefully has sought for its special effect upon the heart and found none; the evidence, he says, is "all clinical,

and the evidence that can show a drug to possess the property of exciting the sluggish and of soothing the excited, of raising the low pressure and relieving the high speaks more for increasing faith in the drug than for the beneficial properties of the drug itself." Undoubtedly too much is claimed for strychnine, but there can hardly be a doubt about its value if properly administered. The writer has satisfied himself of its power of increasing the contractility and tone of the heart muscle when given *hypodermically* in full doses ($\frac{1}{15}$ to $\frac{1}{10}$ gr.).

Any discrepancies in the clinical reports upon the results of strychnine in heart failure are probably to be explained by the fact that it seems to be of very little value when given by the mouth in a mixture or pill. Patients receiving this latter treatment may often be found to remain without improvement for days when one hypodermic dose will change the whole clinical aspect of the case. Where it is not practicable for the visiting physician to administer the drug twice a day by the skin the patient may resort to the sublingual method; an ordinary $\frac{1}{15}$ -gr. hypodermic tablet when placed beside the frenum, below the tongue and behind the incisor teeth, is rapidly absorbed, and acts almost as well as if given by the needle, and it may be repeated every 8 hours. In every case of urgent heart failure $\frac{1}{10}$ gr. should be given hypodermically before waiting for the comparatively slow action of digitalis, and both drugs may safely be administered together by the mouth. Strychnine is probably valueless when given by either route in the ordinary doses of $\frac{1}{50}$ to $\frac{1}{32}$ gr., though the heart of a patient who is already swallowing the drug in small doses seems to respond more promptly to a full hypodermic dose.

One other drug may be mentioned which is not usually placed on the list of cardiac tonics—this is Iodide of Sodum or Potassium. Laboratory methods have as yet given no clear explanation of its soothing and strengthening action upon a failing irritable heart, especially when this is secondary to aortic valve disease. Moreover, the drug relieves cardiac pain in a remarkable manner.

It may safely be said that the great majority of all cases of failing compensation require no drugs except Digitalis, Strychnine and Iodides, with an occasional dose of Mercury and a short course from time to time of Iron; the following is a good routine combination:

R. *Tinct. Digitalis* ζ iv.
 Tinct. Nuc. Vom. ζ iv.
 Spt. Ammon. Arom. ζ iss.
 Aquæ Chloroformi ad ζ xij. *Misce.*

Ft. mist. *Cpt.* ζ ss. *ex* ζ j. *aquæ ter die p.p.a.*

No mention is here made of ether, alcohol, ammonia, &c., which are often classified as cardiac tonics, but it is needless to say they possess no such action, being simply cardiac *stimulants* which may be administered when a rapid stimulation of the feeble cardiac muscle is required, whilst other remedial agents are getting time to exert their more permanent influence.

The patient having been kept in bed till the symptoms of cardiac failure have been relieved by the administration of heart tonics, rest and suitable diet, he may be permitted to sit up daily for gradually lengthened periods, after which other valuable and necessary adjuncts to the treatment are indicated.

Exercises.—These have been already incidentally referred to in discussing preventive treatment. The fact must be constantly borne in mind by the physician that the reserve force of the heart can only be developed to its fullest extent by a judicious and skilfully carried out system of muscular exercise. The patient who has just recovered by the help of rest and digitalis from a serious breakdown of compensation has but a small degree of reserve force; this can never be augmented by a continuance of these measures; should he make any severe muscular exertion dilatation and heart failure would be certain to occur. But by gentle walking exercises, gradually lengthened each day, the mass of cardiac muscle may be further improved in tone and contractility till a moderate strain fails to induce breathlessness. The guide to the limits to be placed upon exercise is a simple one; the walking being at first upon the level, and slow, is always to be stopped upon the first sign of difficulty in respiration or palpitation; fatigue of the skeletal muscles should not be induced. The exercise should always when possible be taken in the open air, and gradually rising ground may be selected, provided the pace is slow and deliberate. Oertel's mountain climbing can only be permitted in very exceptional cases in young subjects, and where there is no dyspnoea every advantage of such methods can be obtained from the safer procedure of locomotion on the level or on a slight incline. Games like golf and croquet may be indulged in after a time, but every exercise in which spurting is necessary should be finally abandoned.

The *Schott* or *Nauheim* treatment is much in vogue. This consists in the use of baths of increasing strengths of calcium and sodium chlorides impregnated with carbon dioxide. With the bathing is associated a system of resistance movements, in which the patient performs various flexion and extension exercises involving the upper and lower extremities and the trunk, the movements being partially antagonised or resisted by a trained attendant.

Under this treatment it is claimed that the bulk of the heart diminishes, the pulse falls and compensation is hastened and perfected. The journey to Bad-Nauheim is a serious under-

taking for weak patients, and as experience accumulates this treatment is steadily losing the glamour which the exaggerated early reports imparted to it. Though not likely to fall into the disrepute which has overtaken the Oertel method, it is being recognised that its range of usefulness should be restricted to cases where there is no arterio-sclerosis or renal lesion, and that cases of advanced valvular disease should not be submitted to its operations.

Every advantage obtained by the Schott-Nauheim treatment can be gained by employing the baths and movements at home. The saline constituents of the bath may be supplied by dissolving in an ordinary sized bath (35 gallons) from 4 to 10 lbs. Sodium Chloride and from 6 to 12 ozs. Calcium Chloride, the smaller amounts representing the No. 1 and the larger quantities corresponding to the No. 6 bath. The weaker baths are taken without effervescence, and after a few days CO_2 is added by using a 5-oz. tablet of Sandoz's fused Sodium Bisulphate with its corresponding weight of Bicarbonate of Soda.

The composition of the No. 6 bath, as already stated, is 10 lbs. Sodium Chloride and 12 oz. Calcium Chloride; this is to be impregnated with CO_2 by adding 24 oz. sodium bicarbonate and 28 oz. hydrochloric acid, but the use of the fused tablet is preferable to that of the free acid, which causes a too rapid evolution of the gas.

Mackenzie, who has studied the effects of the bath at the spa, satisfied himself that these were due mainly, if not entirely, to the temperature (89°F.), and that they could be procured at home by using plain tap water at the same temperature.

Massage will effect everything that the Schott methods profess to produce, and it possesses the distinct advantage that it can be employed in the early stages of convalescence even before the patient is able to leave his room.

At a later stage Zander and Swedish movements are decidedly advantageous, and the combined massage and hot douching to be had at every hydropathic establishment at home are certainly preferable in nearly every case to the long journey to Nauheim, with its accompanying expenses and serious drawbacks.

When compensation has been so restored that all ordinary walking exercises cause no breathlessness or cardiac disturbance a visit to a Swiss resort, when the patient's time and means permit, will be most desirable. Mountain walking exercises (not climbing in the strict sense) may then be gradually commenced and persisted in, as long as no inconvenience is experienced, in order to develop the fullest possible amount of cardiac reserve force by promoting the hypertrophy of every available muscular fibre in the enlarged heart.

■ The treatment of each individual valvular lesion is not here considered, as the physician is not called upon to treat the valve deformity, but to aid nature in restoring the failing heart.

power, which is essentially the same in all cases of valvular disease.

Many *symptoms* or *complications* occurring in these diseases being of a more or less mechanical origin, appear in varying frequency and degree, in association with the disease of a particular valve, and the treatment of these symptoms may be separately glanced at. It must, however, be always remembered that they are in every instance but a demonstration of heart failure, and their presence is a clear indication for the exhibition of the remedial agents already discussed.

Anasarca is the most common of these; it is as a rule more prominent in mitral regurgitation than in aortic lesions, but any form of valvular disease affecting the left side of the heart will cause dropsy when secondary compensation breaks down, owing to failure of the right ventricle. Disease of the tricuspid itself is so rare that it may be omitted from consideration, the chief factor in the production of cardiac dropsy being tricuspid insufficiency caused by dilatation of the right ventricle. This is the ideal condition for rest and digitalis, but in addition to these, remedial agents should be employed with the view of drawing the dropsical fluid off when digitalis fails to achieve this.

The first thing to do in such a case is to combine with the digitalis another cardiac tonic or a diuretic, in order to augment the amount of urine voided. Squill is a favourite adjuvant, but the combination of Blue Pill, Squill and Digitalis, known as Guy's, Baly's or Addison's Pill, is preferable; the popular formula is a modification of this, in which 1 gr. of each of these drugs is given in a pill thrice daily: $\frac{1}{4}$ gr. Calomel every 2 hours for 24 or 36 doses is often most efficacious. Sometimes one large dose—5 to 10 grs.—has a more powerful diuretic action than the above, but Mercurials should not be employed when renal disease is present.

Iodide of Potassium, as already stated, possesses valuable tonic action on the heart, and being also a diuretic, it may be given in 10-gr. doses with the digitalis. Caffeine and Broom are employed in the same manner.

When the dropsy is associated with high pressure and very scanty urine, digitalis must be stopped and Trinitrin or other vaso-dilator should be given; perhaps there is nothing in such a case so useful as teaspoonful-doses every hour of Sweet Spirit of Nitre. Salicylates act as diuretics, and they may be advantageously employed with digitalis when rheumatic or gouty symptoms are present.

In the treatment of cardiac dropsy by diuretics the physician should remember that the action of the members of this therapeutic group of drugs is most fickle and often disappointing; he therefore often has to try one diuretic compound after another to obtain a free augmentation of the amount of urine passed.

Diuretin is much vaunted, but the writer has found it to be the

least dependable prop in the difficult situation ; the allied compound Agurin promises better results. Both substances may be given in doses of up to 15 grs. Theophylline, which is isomeric with Theobromine and the synthesised alkaloid Theocin, are given in half the above doses. Lactose in 60-gr. doses every hour often acts powerfully.

With the view of raising the systemic and renal pressure when this is low, Suprarenal Gland or Adrenalin is often useful ; 3 grs. dry extract or 20 mins. of the solution of Adrenalin Chloride (1 in 1,000) may be given by the mouth, or half this amount of the solution by hypodermic injection.

Bitartrate of Potash sometimes succeeds when everything else fails, but as a rule its best effects are only obtainable in purgative doses.

Saline purgatives must be resorted to when cardiac tonics and diuretics fail ; the rationale of this treatment lies in directly removing a large amount of fluid from the blood by the intestinal glands, which indirectly reduces the dropsy, as the blood must be recouped from the exuded fluid in the subcutaneous tissue. Any strong saline may be administered, but the most decided result is obtainable in water-logged conditions by Hay's method of giving 2 oz. Mag. Sulph. by the mouth dissolved in its own weight of water after a 24-hours' fast and abstinence from all fluids. In this way several pints of intestinal liquid may be promptly removed from the body.

When the swelling of the legs increases in spite of these measures, there is no resort left to the physician but puncturing the skin. The cutaneous surface having been carefully sterilised by washing with an antiseptic solution, a number of minute punctures should be made by a Glover's needle in the most dependent parts, as in the dorsum of the foot and about the ankle. Warm flannels wrung out of hot boric solution being wrapped round the parts, the fluid is permitted to exude so as to drain effectually the subcutaneous tissue. Southey's tubes may be inserted, but upon the whole needle punctures are safer and less liable to be followed by erythema and sloughing ; the scrotum or oedematous prepuce may also be freely punctured. Accumulations of fluid in the peritoneum, pericardium and pleuræ must be relieved by tapping. A salt-free diet may be tried, but little advantage is to be gained by a rigorously dry dietary.

Owing to the weak state of the heart in all cases where increasing anasarca is present the diaphoretic agents so valuable in renal dropsy are contra-indicated. Thus the hot pack, hot-air bath, pilocarpine, &c., cannot be safely employed, but the skin should always be encouraged to act by warm bedclothing.

Dyspnæa, Cyanosis, and Hæmoptysis will call for special treatment ; the best means of dealing with this group of symptoms of pulmonary embarrassment is to open a large vein in the arm so as to immediately relieve the high pressure in the engorged right

auricle and right ventricle ; after the removal of 20 to 30 oz. blood, a full hypodermic dose of Strychnine should be given and the digitalis treatment pushed. The application of leeches in less urgent cases may be tried, but cups should be applied over the bites if any impression is to be made upon the overburdened right heart. Oxygen and compressed air may be inhaled when the cyanosis is marked.

Chloride of Calcium may be advantageously administered by the mouth in cases where there is much capillary oozing from the bronchial or gastric mucosa ; this agent also tends to check the dropsical tendency, and it acts as a true tonic to the heart muscle by improving for the time the blood circulating in the coronary arteries.

Cardiac pain and distress, when these fail to be relieved by digitalis, may be treated locally by Belladonna and Chloroform Liniment applied over the precordium under oiled silk, or a large belladonna plaster may be worn over the heart. When the pain is paroxysmal and accompanied by a high blood-pressure pulse and anginal symptoms, Amyl inhalation usually affords speedy relief, and this relief may be kept up by large doses of Iodides, which sometimes may be advantageously combined with Arsenic in small doses.

Insomnia, as already stated, is most safely relieved by a full dose of Paraldehyde given in diluted alcohol, but when caused by cardiac pain and a general sense of severe discomfort there is nothing so efficacious as a moderate dose of Morphia given hypodermically. Chloral Hydrate is recommended, but in full hypnotic doses this drug is always dangerous. Trional is unobjectionable, but often fails in inducing sleep.

Visceral congestions are best relieved by full doses of saline purgatives. Dry-cupping of the chest, loins or hepatic regions is often very efficacious in relieving bronchial, renal and liver congestion. The administration of Mercurials in these conditions usually affords a considerable degree of relief, but they should not be persisted in for more than a day or two at a time. One full dose of 5 grs. Calomel or Blue Pill followed by a saline purge after 8 hours' interval is the most efficient way of obtaining the full advantages of mercury.

Dyspepsia is often a most serious symptom owing to the accumulation of flatus in the dilated stomach ; this causes pressure upon the already overburdened heart, and greatly embarrasses its action. In acute distress due to this condition the best procedure is to lessen materially the amount of food given by the mouth and to supplement it by rectal feeding. Carminatives may be freely given to cause expulsion of the imprisoned gas, and Papain or Pepsin to assist the digestive process and hasten the passage onwards of the food into the duodenum. Carbohydrates, as already mentioned, should be given sparingly.

Constipation need hardly be considered, since saline purgatives

are so clearly indicated for the relief of other symptoms, and their employment for this purpose keeps the alimentary tract clear. It must, however, be remembered that in the condition under consideration where the entire intestinal surface is in an abnormally sluggish state, scybala may form in a surprisingly short time after free purgation. The bearing down which their expulsion calls forth may dangerously raise the intrathoracic pressure, and therefore a daily evacuation of the bowel is imperative in all cases of failing heart power.

HEMICRANIA—see *Megrim*.

HEMIPLEGIA.

The treatment of paralysis of one side of the body following a hæmorrhagic, embolic, or thrombotic process in the brain is in its first stage that of Apoplexy, which has been detailed under its own heading. The management of the case after the symptoms of shock or coma have passed away consists in a judicious remedying of such complications as constipation, retention of urine, tendency to bedsores, insomnia or restlessness. Mental as well as physical repose is essential as long as the danger of a second seizure is probable, and it is a wise precaution to restrict the diet, as in cases of head injuries, to farinaceous food and milk, avoiding alcohol in every form and strong tea and coffee.

The period of absolute rest in bed is liable to be unduly prolonged, and though no routine rule can be laid down for the guidance of the physician on this point it will be advisable to get the patient to a sofa or couch within a fortnight after his seizure has occurred when this is possible.

Drugs at this stage are usually administered with the view of absorbing the clot in the cerebral tissue or in the occluded artery, but there is little evidence of their utility; no harm, however, is liable to arise from a mild course of Iodides, and since more or less restlessness or cerebral irritability may be present, Bromides may be combined with them. Strychnine must be avoided; any action which it exercises in the early stages is an injurious one. Organic Phosphorus such as is contained in Sanatogen may prove useful as a restorative to impaired cerebral tissue, but even this drug had better be avoided during the first few weeks.

The main indications for the treatment of the palsy are clear; these consist of measures for the preservation or restoration of the nutrition of the wasted muscles and neurons, for the prevention of articular adhesions, faulty position of the affected limbs or joints due to contraction of unantagonised muscles and for the remedying of ataxic or disordered muscular movements.

The first stage of the treatment should be directed to the correction of the faulty position of the affected limb, which shows itself as soon as early rigidity sets in; the tendency of the arm to be drawn towards the trunk and of the forearm to be flexed

at the elbow must be counteracted by placing a large pad, small pillow or sandbag in the axilla and keeping the elbow joint extended. In a similar manner the lower extremity should be mechanically treated by outward rotation and abduction, with flexion of the ankle and eversion of the foot.

It must always be remembered that as this early rigidity or spasticity may not show itself for several weeks after the passing off of the original seizure, in the meantime serious impairment of the joint and muscular movements may become established by the glueing together of the arthritic surfaces and surrounding nerve and muscular tissues. It is therefore necessary as a simple precautionary measure to begin gentle passive movements within a week after recovery from the so-called stroke. By this treatment neuritis may be prevented and the tone of the impaired muscles and their nutrition may be improved, so that wasting is reduced to a minimum.

As the early rigidity advances much may be done by the skilful application of loosely bandaged splints or sandbags to counteract the abnormal attitude of the affected limbs due to excessive action of the flexors. When these are resorted to early, before marked flexion of the joints sets in, the appliances can be usually borne without discomfort, and late rigidity may be entirely prevented. (Late rigidity being always structural, the permanent shortening of the muscles cannot be remedied by the application of splints, which can only further increase the mischief.)

The treatment of early rigidity by mechanical appliances is liable to be overdone, and unless rationally carried out had better be omitted. Thus if it prevents the employment of massage and passive movements more harm than good will result. The bandages should be removed several times a day and gentle passive movements with *light* massage carried out whilst the patient is still confined to his room.

Electricity is much vaunted ; its value is trifling compared with that of the mechanical measures just mentioned, and it should not be employed to supplement massage and passive movements till after the expiration of two months from the seizure. The best routine is to commence with the continuous current, using 5 to 10 Leclanché cells, and large, well-moistened electrodes.

Thus in the early rigidity of the forearm and hand the extensor muscles may be gently and very slowly stroked with one electrode, whilst the other is kept stationary ; any current which causes strong contraction or pain must not be employed. Passive movements at the digital, metacarpo-phalangeal and wrist joints should be perseveringly employed, and a large globular object may be left in the palm of the hand to prevent contraction of the flexor muscles. Once the patient is able to move about with help from room to room all splints should be abandoned in order to enable him to constantly exercise the weakened muscles, care being taken that by the aid of the sound limb the faulty position

of the affected one is kept corrected by the patient himself. Before retiring to rest the splints should be reapplied so as to keep up this correction during sleep. Though it is maintained that no possible advantage can be expected from electrical treatment of the site of the brain lesion the writer has seen benefit follow the application of a current from five Leclanché elements, with one large electrode upon the forehead and the other over the occiput. After a week the current strength may be doubled, and he has employed ten cells, causing the current to flow from an electrode placed over the site of the hæmorrhage on one side, with the other pole situated over the opposite region of the skull.

Later on, should the patient be able to move about in the open air, he must be encouraged to exercise constantly the muscles of the leg, stopping short of fatigue, an attendant being placed on each side to avoid falls. Whilst resting in the seated posture with his foot flexed, the forearm, arm and shoulder muscles may be likewise exercised, after which a short walk will again bring into action the leg muscles. When the return of power begins to manifest itself in the impaired muscles, inco-ordination and disorderly movements akin to what may be seen in ataxia may be observed ; these must be met by careful re-educational methods, as in Fraenkel's system, passive and active movements being assiduously practised till the patient learns the necessary new movement-memories.

Leonard Guthrie has pointed out the importance of persevering with these mechano-therapeutic methods from the first, since the symptoms of an organic lesion are always widely in excess of its extent, and he insists upon the hemiplegic arm never being confined in a sling.

The permanent spasticity following the attack of loss of power in the muscles has been successfully remedied in some instances by resection of the posterior roots of several of the spinal nerves and by the injection of Alcohol into the trunks of the nerves supplying the rigid muscles (see under Paralysis, Spastic).

The treatment of the aphasia which often accompanies the hemiplegic condition when this affects the right side of the body will be found detailed under Aphasia. The hemiplegia caused by cerebral tumour can only be dealt with by measures applicable to the relief of the primary disease.

HEPATITIS AND HEPATIC ABSCESS.

The treatment of these affections will be discussed in the articles under Liver Diseases.

HERNIA.

When the hernia is reducible, a carefully planned truss should be fitted on when the patient is in the lying posture ; this if it is capable of preventing a descent of the intestine or omentum into the sac is all that is required in most cases. The truss must as a

rule be worn for life, though not unusually a case of hernia when treated from infancy by the continuous application of a neatly fitting truss may be found to be completely cured by the end of the second or third year.

Special circumstances may, however, be present in a given case which should determine the surgeon to do an operation for the radical cure of the rupture. Thus if the individual desires to enter into one of the public services or if his life is to be one involving intense muscular activity or strain he should be advised to submit to an operation; all femoral herniæ in young subjects should be treated radically owing to the danger of strangulation. When a truss fails to keep up the bowel or where a prolapse of the omentum proves to be irreducible, the opening should be sealed up by the surgeon, and it is becoming the general routine practice to recommend a radical operation in all cases of herniæ occurring in children over 5 years of age.

The reduction of a *recent* hernia is effected by *taxis*; the patient should be placed in bed or on a couch, whose feet are to be elevated. The thigh should be partially flexed and the limb rotated inwards to secure as much relaxation as possible of the tissues surrounding the neck of the sac. The latter being grasped between the left fore-finger and thumb, gentle traction in a downward direction is made, whilst with a kneading movement of the thumb and fingers of the right hand the tumour is slightly squeezed in order to reduce its bulk before being pushed up. No force in the ordinary sense of the term should ever be employed; the return of a knuckle of bowel to the cavity of the abdomen conveys an unmistakable sensation to the surgeon's fingers as the tumour slips suddenly upwards from his grasp, but a mass of omentum ascends gradually and without noise. If undue pressure is exercised the hernia may be reduced *en bloc*, the entire sac with its contents being forced within the abdominal wall, but still outside the peritoneal cavity. If symptoms of strangulation have already appeared only the greatest gentleness is permissible. The history of the case should be a guide; thus when the gut has been down for some days and obstruction of the bowel and vomiting are present the taxis must not be attempted. In such cases the first touch of the surgeon's fingers should convince him of the danger of rupturing the bowel by the application of any pressure. Tightly strangulated femoral herniæ in young subjects are especially dangerous, but in elderly patients old inguinal ruptures may often be reduced when great skill and caution combined with general anæsthesia are employed, even after symptoms of strangulation have appeared. A hot bath is often a useful adjuvant.

When the taxis has failed the patient should be put to bed and arrangements at once made for carrying out the operation of herniotomy; during the necessary delay ice may be applied and a large enema administered; it is needless to say that purgatives

are always contra-indicated. Where for any reason operation is inadmissible, as in diabetes and Bright's disease, some surgeons recommend tapping of the tumour by a fine aspirator or hypodermic needle, in order to remove flatus before attempting the taxis; such a procedure is, however, liable to lead to extravasation of intestinal contents when any degree of firm pressure or manipulation is subsequently employed.

Herniotomy.—The patient is prepared in the ordinary way for operation; the skin having been shaven and thoroughly cleansed with soap and water, is afterwards carefully sterilised by an antiseptic liquid. If chloroform has not been previously tried, the surgeon before proceeding with his incision, once more may try a gentle application of the taxis; the operation is sometimes satisfactorily carried out under local anæsthesia. An incision should be made through the skin over the neck of the tumour and in the direction of its long axis; each layer of tissue on its exposure is to be carefully divided till the sac is reached. This must be opened with caution to avoid injury of intestine or omentum. The opening of the sac is usually accompanied by the escape of serous fluid, and its interior is smooth and shining and has its vessels running in the direction of its long axis. The latter point readily differentiates the sac from the intestinal wall.

Much is to be gained by observing the nature of the fluid which escapes upon the opening of the sac; if it is clear and odourless there is probably little injury to the bowel from the strangulation. A turbid, bloody or foul-smelling liquid shows that the constriction has already lowered the vitality of the intestine and permitted the sac being infected with the colon bacillus. In either case the sac cavity must be flushed with hot sterilised saline solution, after which the structures entering into the strangulating ring are to be carefully explored, layer after layer being divided, commencing in the dissection with the most superficial stratum and cautiously proceeding till the deeper fibres are divided sufficiently to remove the constriction without severing tissues which are of value in the final closing up of the aperture in the radical treatment of the hernia. The strangulation having been relieved the tumour is gently drawn downwards to bring into view the intestine above the line of constriction. This is closely scrutinised after being well cleansed with warm saline solution and dried by a lint swab, in order to ascertain whether it has been only temporarily impaired or irretrievably damaged. If the purple discoloration speedily begins to lessen and the groove caused by the constriction shows any signs of vermicular contraction passing downwards when the bowel is pinched by the finger, the knuckle of intestine may safely be pushed up into the peritoneal cavity. On the other hand, should a lustreless and ashy-grey appearance of the strangulated mass be evident, it must be accepted that the death of the parts below the constrict-

tion has already taken place or will certainly follow. This may be corroborated by pricking the tissues with the point of the scalpel, and no bleeding follows.

The gangrenous condition being thus obvious, the surgeon should draw down the loop as far as possible and resect it, cutting clear of the injured tissues, the mesentery being resected at the same time and the ends of the divided bowel united end-to-end or by lateral anastomosis. It may be necessary in some cases to remove a few feet of bowel, the portion above the stricture which has been dilated and paralysed often requiring removal.

Occasionally the area of the gut destroyed by pressure may be so limited that it can be invaginated by a seromuscular or Lembert's suture without puncturing the mucous coat. When the bowel involved is the great intestine and the exhausted condition of the patient does not permit of a prolonged stitching operation the surgeon will feel compelled to leave the gangrenous bowel *in situ* after incising it in the sac, trusting to a second operation at a later date to close the resulting artificial anus.

Omentum may be returned like bowel when found to be healthy, but when gangrenous it must be first ligatured with stout silk, which is made to transfix the pedicle, after which the mass is cut off and the pedicle with its occluded vessels is to be returned to the abdominal cavity, care having been taken to insure that no small knuckle of bowel has been concealed within the omental tumour.

The final stage of the operation when the gut or omentum has been found to be in a condition capable of being returned is to proceed with the removal of the sac and closure of the hernial canal as in the radical operation for the cure of hernia.

After-treatment consists in rest to the bowel, but should abdominal distension persist a large enema may be administered after several hours, and when relief does not follow a saline purgative should be given in order to insure the restoration of peristaltic action in the distended bowel. When vomiting persists, and especially should this be foul-smelling, the stomach should be washed out, and this practice is often advisable before operation. In ordinary cases where no complications arise after operation, it is no longer considered wise or necessary to lock the bowels up with opium or astringents. An enema may be given after 24 hours, and a small dose of Castor Oil 24 hours later. Should the symptoms of strangulation remain unrelieved after the operation an exploration of the abdominal cavity is imperatively demanded after a careful examination has been made of the usual sites for another hernia which had been overlooked. The same rule holds good when symptoms of obstruction remain after a hernia has been reduced by the taxis, when the cause will usually be found to be a strangulation which has been unrelieved in a hernia returned *en masse*.

Obstructed or incarcerated hernia occurs in elderly subjects who

suffer from large irreducible herniæ. If the symptoms do not yield to a skilful application of the taxis, herniotomy must be resorted to in order to avoid strangulation.

In some cases the surgeon will find it necessary to operate by opening the abdomen in the middle line, and after the removal of omentum the internal ring may be closed by a purse-string suture applied from above.

Irreducible hernia should be treated by the radical operation when possible, but in old subjects when the tumour is large a bag truss is usually all that is required.

Umbilical hernia is to be treated upon the same lines as hernia in the femoral or inguinal regions. When occurring in infants, strapping applied over a small pad and embracing the flanks is quite sufficient in the majority of cases to insure closure of the opening. In adults this form of hernia is very often irreducible, and may be kept from increasing by an abdominal belt containing a long strip of steel, to the centre of which is fitted a large pad which extends considerably over the margins of the hernial opening. Owing to the danger of strangulation and incarceration it is advisable to recommend a radical operation. When strangulation has already occurred there is no resource but herniotomy, and after relief of the constriction the opening must be closed and the sac excised.

Radical Operation for the Cure of Hernia.—As already stated, this is now advised as a routine in all young subjects. The operation is modified in many details in the hands of different surgeons and in endless ways to meet the conditions found present in a given case and according to whether it is situated in the inguinal or the femoral ring or at the umbilicus or other weak spot in the abdominal wall. Thus for the cure of a hernia in the inguinal region an incision is made through the skin along the inguinal canal, the aponeurosis of the external oblique is divided, and the sac is separated from the cord up to the internal abdominal ring. The isolated sac is either invaginated into the inguinal canal by a ligature attached to its fundus, which is then drawn up through the inner ring into the abdominal cavity, the ends of the ligature being brought out through the abdominal wall; or the neck of the sac is ligatured by transfixion, the ends of the ligature being brought out through the abdominal wall and tied, after the sac below the pedicle has been cut away. The inguinal canal is then obliterated by stitching the internal oblique and transversalis to Poupart's ligament, the upper lip of the incision in the internal oblique being also separately stitched to Poupart's ligament, after which the skin incision is closed by sutures.

When the wound has firmly united a truss may be worn to let the patient walk about; this may be discarded after a couple of months. A better plan is to keep him in bed for 4 or 5 weeks and avoid the use of a truss altogether, care being taken that no active

muscular exertion be permitted for several weeks after he has commenced to move about.

The radical operation for femoral hernia is conducted upon the same lines. After the exposure and opening of the sac it is ligatured by transfixing its neck; the portion of the sac below the ligature is then cut away. Each end of the ligature threaded into a long curved needle is passed through the femoral canal, and the point of the needle made to appear externally after perforating the abdominal wall, and the ends are tied together. Usually it is not necessary to occlude the femoral canal by stitching the pectineus muscle, fascia and Poupart's ligament together, as formerly carried out.

In all cases of hernia where a truss is employed to keep up the prolapsed bowel or omentum it is of vital importance that the appliance should fit the patient properly, otherwise it becomes an additional menace to his safety, especially if the pad permits the hernia to descend behind it or by its side. This may arise from the weakness of the spring of the instrument. When the services of an experienced truss-maker are obtainable they should always be requisitioned, and the surgeon should see that the pad is of the proper shape and size, and that the spring of the instrument is neither too strong nor too feeble. As a rule it may be discarded after assuming the horizontal position at night, but it should be adjusted in the morning before the patient leaves his bed.

It is always advisable to have two trusses, so that the one in reserve may be employed while the ordinary one is being recovered or repaired. Some patients provide themselves with a water-proof instrument for use when bathing.

When the patient cannot interview an instrument-maker the surgeon should supply him with measurements from which a well-fitting truss may be fashioned. Ready-made cheap instruments are often unsatisfactory and sometimes dangerous. The size of a tape passed round the pelvis at a level of half-way between the iliac crest and the great trochanter and meeting at the hernial opening should be supplied, together with an estimate of the size of the latter, stating the side on which the hernia is situated and whether in the femoral or inguinal region.

The writer has several times witnessed arrested development of the testicle following the continuous application of a tightly fitting truss in young subjects. This is liable to occur in rapidly growing boys when the instrument has been worn for too long a period without being replaced by a larger one. The mortality of the radical operation being now, thanks to aseptic methods, almost nil, such a risk should never be permitted, and after the failure of cure by the truss, operative measures should not be delayed beyond the fourth year, and many surgeons insist upon the necessity of operating at the end of the first year by removing the sac after ligaturing it high up without opening the inguinal canal.

HERPES.

Herpes Labialis is usually so short-lived that seldom are local applications indicated ; when the irritation is severe the vesicles may be fomented by applying a small sponge squeezed out of hot water ; after drying the part it may be painted over with Flexible Collodion. The sores which follow are sometimes very slow in healing when the patient keeps picking away the scab ; the application of a solution with a camel's-hair brush of 10 grs. to the ounce Nitrate of Silver hastens resolution, or the crusts may be kept moistened by Glycerin of Borax.

Herpes Preputialis is also a fleeting ailment, but sometimes in ataxic patients it proves an intractable affection. The best method is to employ a desiccating powder like Zinc Oxide, Calamina or Fuller's Earth when the prepuce is long and an ointment when the glans is uncovered.

Herpes Zoster, Shingles or *Zona* is seldom diagnosed till the eruption of vesicles has already appeared, though the preceding pain may be so severe as to demand a hypodermic of Morphia. When the cause of this pain has not been suspected and any severe form of counter-irritation has been employed to lessen it, such as sinapisms, blisters, &c., the eruption is always formidable and sloughing of tissue may follow. The use of a spray of Ethyl Chloride is most comforting at this early stage when applied to the skin near the spine at the level of the involved nerve, and it is equally soothing at a later stage after the eruption has disappeared.

Upon the appearance of the first few vesicles arises the question of treatment to cause abortion of the eruption. Dupas lays absorbent wool soaked in 90 per cent. Alcohol over the developing vesicles, and covers it in with oiled silk. Unna paints the region over with Ichthyol or covers it with Zinc and Resorcin Gelatin. Alcoholic solutions of Resorcin (2 per cent.), of Thymol or Menthol have been used for the same purpose, but in all probability no local application has any abortifacient action.

The best routine treatment is to powder freely over the site of the eruption with equal parts of Zinc Oxide and finely powdered Starch, and cover with a soft uniform layer of absorbent wool, which should be kept in position by a bandage or girdle. This prevents the vesicle being ruptured by friction against the clothing or by scratching. Any desiccating powder as Fuller's Earth, Talc, Calamina, Bismuth, &c., may be similarly employed. The application of Unna's Zinc Jelly at this stage is a favourite method of treatment with many physicians ; the writer prefers the powder and wool, as it can be often removed easily for inspection. Boric Acid in dry powder may be substituted for the zinc where the skin is liable to be infected as in uncleanly patients. Claisse treats the vesicles like burns of the second degree ; after puncturing each with a sterilised needle he dresses with Picric Acid Solution, and always finds healing most rapid

and satisfactory. Where the vesicles when first seen are already ruptured by friction the best treatment will be by ointments; any soothing, astringent and antiseptic unguent may be freely applied on lint or old sterilised linen, as—

R. *Liq. Plumbi Fort.* ʒss.
 Hyd. Ammon. Chlor. gr. x.
 Ungt. Zinci Oxid. ʒij. *Misce.*

When pain is severe during the eruptive stage, 20 grs. Camphor, 10 grs. Menthol or 5 grs. Cocaine may be added to the above ointment.

Analgesics may be required internally, and the safest of these is Antipyrine given in 10-gr. doses, Morphine being only employed where the pain is very severe, as in herpes attacking the ophthalmic division of the fifth nerve. In this form of zoster, Cocaine may be instilled into the conjunctival sac and the lids and temples covered over with an ointment of Calomel (15 grs. to 1 oz.), dry powders being contra-indicated, as the ulceration will be encouraged to proceed under the dry crusts and lead to extensive scarring. The eye must be narrowly watched, as the accompanying conjunctivitis and keratitis may lead to serious ulceration and perforation ending sometimes in danger to the globe.

Neuralgia is very liable to remain after the eruption has completely resolved itself, and in elderly subjects this may become formidable, especially in eye cases, but not infrequently also when the trunk nerves have been involved. Quinine, Antipyrine, Phosphide of Zinc ($\frac{1}{10}$ gr.), and in gouty subjects Colchicum, Aspirin or Salicylates may be employed. The continuous and high-frequency currents often afford relief, whilst improved hygiene, liberal feeding, change of air, rest and alteration of the environment may be tried. Morphia is contra-indicated in such cases owing to the danger of establishing the opium habit. Arsenic is often recommended, but the knowledge that herpes has been often due to chronic arsenical poisoning should cause the physician to discard this drug in the treatment of the neuralgia following the eruption. Dr. Eustace has observed several cases of bilateral herpes which were caused by arsenic, and he believes that the bilateral type is always so produced.

HICCOUGH.

When occurring in the course of serious diseases, as renal or organic stomach affections, this condition may prove fatal by inducing exhaustion, and it must be met promptly by agents directed against the primary cause. Thus the hiccough arising in the uræmic state should be treated by eliminatory measures, as brisk saline purgatives, hot-air baths or hot packs and Pilocarpine hypodermically. When occurring during the progress

of stomach affections the most rational treatment will be to evacuate the contents of the organ by an emetic or by a skilful washing out of the stomach by the soft rubber tube.

In most instances, however, this symptom must be met by empiric methods, the remedy which acts instantaneously in one case proving valueless in the next, so that the physician is compelled to resort to one agent after another till he discovers the remedy suitable for the case under treatment.

The simplest manœuvre to commence with is to cause the patient to hold his breath for the longest possible period, and if this fails, to close the mouth and firmly pinch the nostrils to arrest totally the respiration till some degree of cyanosis is produced.

Hiccough in children is often dissipated by their companions who have learned the trick for themselves by inducing a sudden degree of fright, but usually it is not desirable for the physician to resort to this as a therapeutic agent; a cold shower-bath is often efficacious in hysterical patients. Compelling the patient to raise his arms vertically above his head and keeping them there till they fall by reason of muscular exhaustion, acts in a similar manner by strong arrest of the attention, which modifies the respiratory action.

Pressure firm and continuous for a couple of minutes over the phrenic nerve in the neck, over the supra-orbital at the brow, and ice to the auditory meatus often act promptly. A large sinapism or a hot poultice to the pit of the stomach may be tried, or a Cantharides blister may be applied over the phrenic or upper cervical nerves. Often intractable cases yield to forcible traction on the tongue for a couple of minutes as practised in the Laborde method of performing artificial respiration, but the traction should not be rhythmical but continuous. Sneezing induced by the insufflation of strong snuff or the inhalation of Ammonia may be tried. The continuous current applied with one pole over the phrenic and the other on the epigastric region sometimes stops the spasmodic contraction of the diaphragm.

Of internal remedies there is no end; these must also be employed in empiric fashion. The simplest consists in the administration of any warm carminative as *Sal Volatile* diluted by water, a small dose of undiluted Alcohol, Oil of Peppermint, Turpentine, Capsicum, *Tr. Card. Co.*, &c. When these fail inhalation of Nitrite of Amyl or Nitroglycerin by the mouth may be tried; Chloroform Narcosis is usually very efficacious, especially in hysterical cases, and where deep anæsthesia is necessary Ether is preferable.

Amongst narcotics employed for the relief of the spasm, *Cannabis Indica* holds a place next to Opium; Bromides in large doses, Chloral, Hyoscine, Valerian, Camphor, Musk, Prussic Acid and Antipyrine are but a few of the host of agents recommended. A good routine in intractable cases is a powder consisting of

$\frac{1}{8}$ gr. Cocaine, $\frac{1}{12}$ gr. Morphine and 5 grs. Bismuth Carbonate placed upon the tongue and washed down with a little water every two hours, a capsule of 1 min. Creosote being given also every 2 hours alternating.

A full hypodermic of Morphia seldom fails to give temporary relief, and often the spasm does not return.

A very serious responsibility rests upon the physician who is called to give relief to the agonising discomfort caused by the hiccough appearing as a terminal event in advanced renal disease or gastric cancer in patients dying from the effect of the primary lesion. With the view of soothing the last hours of life the question of affording euthanasia becomes urgent, and too often the attendant feels compelled to withhold the narcotic in case the sufferer might not regain consciousness before death and his friends might consider that the injection had hastened his end. The wisest and most humane course under these circumstances is after a consultation with another physician to take the patient and his friends into his confidence, and assure them that the hypodermic injection of morphia will relieve suffering without hastening death, though the patient may pass away in his sleep.

HIP-JOINT DISEASE.

The great majority of the cases coming under the care of the surgeon are of tuberculous origin, and the most important point in their treatment is the promptitude with which rest can be secured for the articular surfaces. A great change has been witnessed in the treatment of hip-joint disease during the last 20 years, operative procedures as incision and amputation being now very rarely resorted to. Most surgeons have entirely abandoned excision, and Bowlby has recently published very remarkable success in 900 cases at the Alexandra Hospital treated by rest and extension with general hygienic measures, the mortality being less than 4 per cent., though 40 of the series were examples of bilateral disease.

As soon as the earliest signs of rigidity, tenderness and pain present themselves the child should be placed upon his back in bed, lying upon a firm hair mattress, a weight and pulley being employed to secure extension, the weight being attached to a stirrup. The degree of traction can never be such as will secure separation of the opposed articular surfaces, the object being to secure fixation and absolute rest from muscular spasm and startings, hence with young children the weight need seldom exceed 1 or 2 lbs. in order to avoid stretching of the ligaments. The traction in all cases where deformity is present should be applied in the direction of the axis of the contracted limb, and Edmund Owen points out the importance of making the traction in the line which the thigh takes when the pelvis is squared and the loins are flat. Where much adduction is present counter-extension by means of a perineal band is necessary, and abduc-

tion may be corrected by attaching a weight to each limb or by applying a double long splint with a hinged cross-bar.

Restless children may be treated upon the same principle by the use of a double Bryant's splint and elevation of the foot of the bed, or a Thomas's splint may be applied at once, though the patient should be kept in bed till the deformity has disappeared and the pain has passed away.

The weight and pulley should not be discarded till all symptoms and signs have been removed, but absolute rest of the joint must be afterwards maintained for a very considerable period, varying from at least 1 year and upwards, during which time the affected limb must never be permitted to bear any portion of the weight of the body.

As the tuberculous nature of the joint affection clearly indicates open-air treatment, it becomes a matter of vital importance to secure immobility of the articular surfaces by some method which will enable the patient to move about or be carried out of the sick-room, and this is especially desirable in the summer months. For all practical purposes, the skilful adjustment of a Thomas's splint suffices when pain, tenderness and muscular rigidity have been combated by extension. After the application of the splint a patten should be attached to the sole of the boot on the sound side in order to prevent the foot of the affected limb touching the ground, then by the help of crutches the patient should be made to walk about for a period of twelve months. During this time gentle friction or mild massage of the muscles may be practised, but movement of any kind at the hip joint is not permissible.

Very young children may have both limbs encased by a double Thomas's spinal caries splint, so that they can be carried about in the open air. Phelp's box answers the same purpose. The objection to the routine use of Plaster of Paris splints is the danger of an abscess being overlooked till the skin has become involved.

In neglected cases where extension fails to reduce the contracted state of the limb muscles these should be stretched under Chloroform, and occasionally it may be even necessary to perform tenotomy, after which extension must be again employed. Should an abscess occur it never should be permitted to discharge spontaneously as septic infection of the cavity or sinus is certain to occur. It may be aspirated and the sac injected with Iodoform emulsion, and some surgeons recommend similar treatment of the joint itself when signs of effusion are present.

When sinuses are already present these should be opened up and scraped, and any diseased bone gouged out or sequestra removed, but as all partial operations on tuberculous bone are liable to prove unsatisfactory it is a good practice to first try the effect of injecting warm Bismuth Jelly into the open sinus, as often complete healing follows unless a sequestrum is present.

Where there is evidence of carious or dead bone in the joint the gouge or chisel must be used after an open incision by Kocher's method. This gives much better results than excision of the head and neck of the femur, though when the head of the bone has become dislocated upon the dorsum ilii and the acetabulum is extensively diseased and numerous infected sinuses are present there may be no other choice but excision or amputation of the wasted limb to prevent lardaceous disease or death from exhaustion.

Much may be achieved in the treatment of this disease by the employment of the vaccine method of Wright, which will be described under Phthisis. Even when secondary infection by pus-forming organs has taken place in the sinuses a vaccine may be prepared from cultivating the cocci, and this may be employed in addition to minute doses of Tuberculin. In all operations about the diseased joint, the practice of the surgeon should be to avoid drainage so as to prevent this secondary infection, the cavity of the abscess or of the joint being thoroughly disinfected after curetting, the skin wound must be carefully sutured, and sealed up from the air, a quantity of Iodoform Emulsion having been left in it. (Though Bismuth Jelly possesses such remarkable antiseptic action upon the open sinuses, it must not be injected into a sealed up abscess cavity unless drainage is provided.) By resorting to vaccine treatment in apparently hopeless cases amputation may sometimes be avoided, but the worst cases should not be permitted to die without the chance being given to the patient of an operation. Nearly 40 years ago the writer operated for the late Dr. Newett upon a girl whose femur had spontaneously fractured in the upper third from extensive tuberculous disease; the neck, head and upper part of the shaft were destroyed by caries. After removal of the limb a large proportion of the ilium, ischium and the whole of the acetabulum were gouged away, exposing the pelvic fascia. The tissues composing the buttock were infiltrated with gelatinous and caseating products and riddled with old sinuses. The ligature applied to the femoral artery cut through the diseased coats of the vessel, necessitating dissection of the external iliac, which he ligatured in the pelvis. Notwithstanding that the patient had suffered from night sweats and repeated hæmoptysis before the operation she made an excellent recovery and is still living and well. Bowlby has drawn attention to the remarkable fact that phthisis and scrofula very rarely develop in patients suffering from hip-joint disease.

Where complete recovery has occurred in neglected hip-joint disease with ankylosis of the joint in such a position as renders the limb useless and progression impossible or highly inconvenient, an osteotomy operation should be undertaken to correct the deformity, the section of the bone being made at the neck or below the lesser trochanter according to the requirements of the case. Murphy's

arthroplastic operation which consists in transplanting between the ends of the bones a flap of fatty tissue has proved useful in some cases by providing a movable joint.

The treatment of non-tuberculous or acute *septic* inflammation of the hip joint is to be carried out on similar lines. Extension in these cases may be resorted to in order to diminish pain, but the acute abscesses which are sure to form will demand prompt incision and free evacuation of the pus, which differs materially from the secretion found in the tuberculous cases. These abscesses are liable to point in the pelvis or extend along the planes of deep areolar tissue in the thigh, and pyæmia is apt to occur, hence the freest drainage is necessary after thoroughly flushing out the abscess cavity with Perchloride of Mercury solution. The joint will usually require to be explored by an anterior incision, and if the head or neck of the femur is found to be necrosed they must be excised and a counter-opening made for drainage through a large-sized tube.

The after-stages of the affection may be curtailed by the judicious employment of a vaccine prepared from cultures of the purulent fluid, provided that the infection keeps localised.

HOARSENESS.

This is but a symptom or sign of several different diseases, and should not be regarded merely as a synonym for laryngitis.

The treatment in every case must be that suitable for the removal of the primary cause—tubercle, cancer, syphilis, diphtheria, oedema, perichondritis, catarrhal laryngitis, papillomatous growths, singers' nodes, pachydermia laryngis and extrinsic causes which by producing paralysis of the muscles interfere with the perfect approximation of the vocal cords as in thoracic aneurisms. The most frequent form of hoarseness which the physician is called upon to treat is that arising from excessive use of the voice, which induces a chronic laryngitis; the treatment of this affection is dealt with under Laryngitis (see also under Pharyngitis, Throat Affections and Aphonia).

HODGKIN'S DISEASE—see Lymphadenoma.

HOOPING COUGH—see under Pertussis.

HYDATID DISEASE.

Prophylaxis is of vital importance; the hydatid cyst is the result of the introduction into the human alimentary canal of the eggs of the *Tænia echinococcus*—a small tapeworm infesting the dog and wolf. The human hydatid is the bladder stage of this parasite's existence. The eggs find their way into the human stomach chiefly through drinking water. Hence the necessity, in districts where the parasite abounds, to look most closely to the filtration of water and the purity of food. The utmost

scrupulosity should be observed as regards the personal cleanliness of all who come into close relations with dogs. This minute worm is also found in dogs in this country in vast numbers in the small intestines. The dog becomes infected by eating the offal of sheep suffering from hydatid disease. As the mature worm does not exceed $\frac{1}{3}$ inch, it is easily seen how readily the minute ova in the last joint of the worm which alone contains the developed sexual organs may find entrance into the human stomach in water or from the soiled hands of individuals who are in the habit of caressing the dog.

Much aid has been afforded in the treatment of hydatid disease by the recent introduction of improved methods of serum diagnosis by the employment of Guedini's discovery of the presence of specific anti-bodies in the blood serum of patients suffering from hydatids, the antigen being easily obtained from any sample of preserved hydatid fluid. Another aid in diagnosis is the presence of eosinophilia and of basophilia.

The only justifiable treatment of the hydatid cyst consists in the employment of radical surgical measures. The plan of aspirating its contents with the view of causing the death of the parasite has been abandoned owing to the danger of suppuration, and where aspiration has to be employed for diagnostic purposes the surgeon should be prepared to proceed with the removal of the tumour. Condemnation has been pronounced upon electrolysis, acupuncture and the injection of antiseptic liquids into the sac; all anthelmintic drugs by the mouth are futile. The surgeon should aim in every case when this is possible at complete excision of the cyst with its inner wall by carefully dissecting out the tumour from the surrounding adventitious tissue. Where this is not practicable the cyst should be freely incised, its contents thoroughly evacuated and the cavity packed with sterilised gauze, which in each subsequent dressing is to be replaced by fresh packing till the complete obliteration of the sac has been effected.

The steps of the operation obviously require modification according to the nature of the organ or tissues in which the cyst has developed.

The liver is the most common site, more than half of all hydatids being found in this organ. A pedunculated cyst depending from the under-surface of the liver may be easily reached by an anterior abdominal incision; a ligature having been applied to the pedicle when the neck of the tumour is long and narrow, the cyst may be removed by cutting through the pedicle below the ligature.

Hydatids embedded in the hepatic tissue demand a different treatment; the organ being exposed by abdominal section and the cyst isolated from the peritoneal cavity by packing the edges of the wound with sponges, the wall is incised and its contents drawn off. The incision in the cyst is next enlarged so as to thoroughly expose the white parasitic wall, and whilst this is

being gently drawn upon by forceps its delivery is facilitated by a jet of normal serum injected between it and the adventitious fibrous capsule in which it lies. The resulting cavity is then thoroughly cleansed by irrigation and its lips sutured before closing the abdominal wound.

Where the parasitic cyst wall cannot be removed, the lips of the incision in the adventitious cyst may be sutured to the edges of the abdominal wound and the cavity packed with gauze as in Lindemann's method. Deeper hydatids must be removed through a posterior incision over the lower ribs which will require excision so as to open up the pleural cavity, the cyst being then reached through an incision in the diaphragm.

When an hepatic hydatid cyst has already suppurated, it must be treated as an abscess. The abdomen should be opened, the purulent contents of the sac evacuated by a free incision, and after irrigation with an antiseptic solution the cavity should be packed with gauze or a free drainage provided by introducing a rubber tube after the margins of the cyst wall have been stitched to the lips of the abdominal wound.

Pulmonary and pleural hydatids can be successfully treated by excision of two or three ribs, removal of the cyst contents and of its parasitic wall, with or without drainage. Aspiration is liable to cause death in pulmonary hydatid disease, and must never be resorted to. Should suppuration occur in the pleural cavity, a free incision must be made between the ribs, and the space washed out and drained as in empyema. Abscess of the lungs, if near the surface at the base, may be successfully treated in a similar way.

Hydatid cysts in the brain have been successfully removed when near to the surface by a trephining operation ; these cysts are usually sterile, containing no scolices or daughter cysts.

HYDROA—See Dermatitis Exfoliativa.

HYDROCELE.

The accumulation of serous fluid constituting ordinary chronic hydrocele of the tunica vaginalis in the adult may be safely left alone till it assumes dimensions which cause inconvenience. Temporary relief may be obtained by tapping, though except in the child the fluid is bound to accumulate again.

The patient should be seated in a chair with the buttocks brought forward to the edge ; the surgeon grasps the scrotum from behind near the neck of the sac, and by squeezing the tumour the skin and tunica are made very tense. The testicle and any large scrotal veins being located, a fine sharp trochar with its canula is plunged into the sac, the canula being pushed home as the trochar is withdrawn, when the contents of the sac will be thoroughly evacuated. The trochar should be made to enter the tunica above the centre of the tumour by pushing it directly

backwards, elevating the point slightly so as to avoid injury to the testicle, and care should be taken to insure that no hernia is present. The scrotal wound is afterwards sealed by the application of Collodion or by a small pad of lint soaked in Friar's Balsam, and the patient is made to rest for a few hours.

For the radical cure of ordinary hydrocele the older operation of injecting the emptied sac with 2 drs. Tincture of Iodine or 30 mins. strong Carbolic Acid and kneading the scrotum gently so as to insure thorough contact may be resorted to where for any reasons a cutting operation is inadmissible.

For all ordinary cases the modern plan of retroversion of the sac by making an incision in the scrotum is the safest and most reliable procedure. The incision should be sufficiently large to permit of the testicle being delivered through the wound with the parietal layer of the sac retroverted, after which the lips of the wound in the latter are sutured with catgut behind the epididymis and the sac well washed out before returning the testicle to the scrotum and closing the skin wound. The patient should be confined to bed for a week.

In old hydroceles with very thick walls the parietal portion of the sac should be dissected out and excised, and the cavity temporarily packed with gauze till all hæmorrhage is stopped, after which the skin wound may be closed by suturing.

Congenital hydrocele sometimes disappears and does not return ; the closure of the inguinal canal by a well-fitting truss prevents the descent of a knuckle of bowel and causes obliteration of the open funicular process, which connects the abdominal cavity with the sac of the tunica vaginalis.

When a truss fails, tapping or acupuncture may be tried, and if the fluid continues to accumulate, the upper part of the sac should be exposed and the neck treated as in the radical cure for hernia, and the hydrocele dealt with by the retroversion of the lower portion of the sac.

Infantile hydrocele usually yields to tapping with an aspirator needle or to acupuncture by a Glover's needle, but when these fail the sac may be excised or retroverted as in the treatment of ordinary hydrocele.

Encysted hydroceles of the cord, of the testicle and of the epididymis (spermatocele) may be tapped or acupunctured, and when this fails excision of the sac should be effected. Injection after tapping usually suffices, but an encysted hydrocele of the cord may communicate with the peritoneal cavity, and should not be injected with any irritating fluid ; sometimes it may be cured by the application of Iodine externally.

Hydrocele of a hernial sac may exist after the cure of a hernia has been accomplished by the use of a truss, which has obliterated the neck of the old sac ; the best method of procedure in such a case is to excise the sac after ligaturing its neck.

The treatment of hæmatocele complicating any of the varieties of hydrocele will be found described in the article on Hæmatocele.

HYDROCEPHALUS, Acute—see under **Meningitis**.

HYDROCEPHALUS, Chronic.

The rare external variety of this affection in which the accumulation of fluid exists outside the brain surface in the subdural space is beyond the reach of treatment.

The internal form (either congenital or acquired), which is produced by distension of the ventricular cavities, has been often surgically treated, but seldom with success. Relief may always be obtained by puncturing the ventricle with a fine aspirator needle introduced through the anterior fontanelle, avoiding the longitudinal sinus; only a small quantity of fluid should be removed (from 2 to 4 or 5 drs.) and the head firmly bandaged, the operation being repeated every 6 or 8 days as long as improvement is noticeable, the strictest antiseptic precautions being maintained. The same result is obtainable by lumbar puncture, which has proved successful in the cure of Quincke's hydrocephalus.

For the acquired hydrocephalus following simple acute basic meningitis various attempts have been made to establish permanent drainage of the ventricles. The most hopeful of these consists in the introduction of a fine bent tube of gold into the descending horn of the lateral ventricle, the end projecting from the ventricle being secured in its place by sutures applied to the inner aspect of the dura mater, thus establishing a free communication or drainage between the interior of the ventricle and the subarachnoid space, so as to remedy the blocking of the natural drainage channel of the brain and cord. The establishment of continuous drainage of the fourth ventricle through an external opening made in the occiput has proved a dangerous procedure owing to the certainty of infection of the track from without, and the establishment of drainage between the spinal subarachnoid and the retroperitoneal spaces or peritoneal cavity has proved impracticable.

Drugs internally are of little value except in syphilitic cases, where Mercury and Iodides should be steadily pushed, but in any case where tapping of the ventricles or lumbar puncture is to be tried these drugs should be employed simultaneously with the operative procedure, and the effect of an elastic bandage applied to the skull should be carefully watched.

The treatment of the various forms of *Cephaloceles* in which some portion of the cerebrum or its membranes project under the scalp through a congenital opening in the cranial bones is usually very unsatisfactory. Small meningoceles may sometimes be successfully dealt with by reflecting a flap of the scalp and closing the neck of the sac by ligatures, so as to prevent the escape of cerebro-spinal fluid.

HYDRONEPHROSIS.

The treatment of an accumulation of fluid in the dilated pelvis of the kidney consists in the early removal of the cause. Thus in Glénard's disease or where the floating condition of the kidney exists the hydronephrosis is at first intermittent, disappearing as soon as the normal position of the kidney is restored and the kinking of the ureter removed. The prevention of further attacks may be achieved by the use of suitable abdominal supports, as described under Glénard's Disease; when these fail, the surgeon should resort to the operation of fixation of the kidney, and if necessary also of the liver.

The most serious cases are those where the ureter has become blocked by an impacted calculus. Where the blocking is of recent occurrence and the tumour not very tense, the simple operation of manipulating it through the abdominal walls should have a fair trial. With the anatomical position of the kidney and ureter and their relations to other organs in the abdomen before the surgeon's mind, he may try a series of massage and pressure movements with the view of dislodging the calculus or causing the fluid to flow past it into the bladder, as recommended and practised by Sir W. Roberts. This manœuvre is worthy of a trial, and before commencing it the patient's abdomen should be freely poulticed or swathed in warm water bandages covered by a piece of stout mackintosh for 48 hours—a local hot pack. It is needless to say that undue force should not be employed.

Aspiration or tapping must be resorted to when the tumour is tense and of large dimensions. It may be the only means of prolonging life where the opposite kidney has been previously destroyed by an old impaction or where the hydronephrosis is bilateral, and the tapping may be repeated as often as necessary. The site of the puncture is of importance. The sac should be entered from behind, midway between the last rib and the iliac crest at the outer border of the erector spinæ muscle. On the left side the best spot is one just in front of the interval between the last two floating ribs. All the fluid should be removed through a moderately fine and long needle, and it may not again accumulate owing to the previous destruction of the entire secreting structure of the kidney, or the tapping may, by relieving or removing the pressure and irritation, cause the descent of an impacted calculus into the bladder, or it may be followed by subsequent discharge of hydronephrotic fluid into the bladder without the descent of any obstruction. These results, though very improbable, have been recorded in isolated instances, and justify the operation of tapping before resorting to more severe and dangerous measures. An attempt may be made to establish drainage by inserting a fine rubber tube into the sac through the canula or hollow needle before withdrawal, but the establishment of a permanent fistula is most unsatisfactory and should if possible be avoided.

The best routine surgical procedure is to expose the kidney by a lumbar incision, tap the sac and draw the organ out through the wound, where it should be freely incised along its convex border so as to thoroughly explore its pelvis. If the obstruction is found to depend upon the formation of a valvular septum at the entrance to the ureter, the valve should be slit vertically and its edges sutured in the transverse direction. Should an impacted calculus in the upper part of the ureter be found, it should be removed by forcing it back into the renal pelvis, from which it can easily be extracted through the wound.

Where the obstruction is found to be the result of old adhesions between the ureter and the outer surface of the pelvis, these should be carefully dissected out, and it may be necessary to divide the duct and insert its lower end into the most dependent portion of the dilated pelvis by the operation of uretero-pyelo-nephrostomy, or a lateral anastomosis may be effected. A very large sac may sometimes be successfully reduced by removing a portion of its walls or by infolding them by a series of sutures after transplanting the orifice of the urethra into the lowest part of the cavity. Drainage of the kidney in all cases is necessary till the distended pelvis has time to contract before the removal of the tube. Where a fistula fails to close owing to the continuous discharge of urine, the only resource left to the surgeon is to perform nephrectomy and excise the organ, and this may be obviously found necessary when the exploratory incision reveals an advanced stage of disorganisation of the gland. Such a procedure cannot, however, be entertained unless the opposite kidney is functioning in a normal manner.

In some cases the history and nature of the case will show that the nephrectomy should be carried out through an anterior incision made as in ordinary laparotomy for the removal of an ovarian cyst; a necessary preliminary in all such operations is catheterisation of the ureters from the bladder in order to establish proof of the integrity of the kidney on the opposite side.

When the incision of the sac reveals a purulent condition of its contents, the pyonephrosis should be dealt with by free drainage or nephrectomy, as described under Pyonephrosis.

HYDROPHOBIA.

The success of *Preventive* treatment has of late years been conclusively demonstrated by the immunity enjoyed by Great Britain and Ireland through the legislation introduced by Mr. Walter Long in his muzzling regulations, and a similar result has been achieved in other regions by rigid quarantine regulations. But since the disease is also spread by rabid wolves, till the annihilation of these animals is accomplished hydrophobia cannot be expected to become an unknown affection.

Fortunately only a comparatively small proportion of human beings bitten by a rabid dog is found to develop hydrophobia,

the percentage being probably under 15. For wolf bites the percentage is above 70, and the proportion in both cases rises when the inoculation has been made upon the parts of the body unprotected by clothing.

The vital importance of cauterising the wound is obvious, and the success of this prophylactic measure will depend upon the promptness and thoroughness with which it is carried out. An extemporised tourniquet should be instantly applied upon the proximal side of the wounded site and the bite thoroughly cleansed; innumerable instances are on record where the infective process has been prevented by sucking the wound, though such a procedure cannot be regarded as free from danger where any abrasions of the mucous membrane are present.

The most effective agent for the destruction of the germs in the wound is the actual cautery, but as this is very painful caustics are more frequently resorted to. Owing to its portability Nitrate of Silver is the one usually depended upon, being generally in the pocket-case of the veterinary surgeon and of the practitioner; it is, however, one of the least reliable and most painful of caustics. Pure Carbolic Acid thrust deeply into the wound on a piece of pointed wood is a very powerful steriliser; any caustic or corrosive substance which happens to be at hand may be employed. The thorough excision of the bitten area by the knife is recommended, but as even this heroic procedure should not justify the victim in refusing Pasteur treatment in case the suspected animal should be afterwards proved to have been suffering from true rabies, excision is unnecessary unless in such cases of extreme isolation as will prohibit a journey to the Paris or other Pasteur Institutes. Every person bitten by an animal known to be rabitic should submit without any unnecessary delay to a course of Pasteur treatment.

The basis of this form of vaccine treatment depends upon the long period of incubation of the disease, this being never shorter than two and very often as long as six weeks, during which period the patient can be effectually prevented from developing hydrophobia by a series of preventive or immunising injections of a modified or attenuated virus along with the toxins produced by it, protection being established before the symptoms of hydrophobia have time to show themselves. In a few cases the incubation has been much longer, and a period of two years in one authenticated case intervened between the reception of the wound and the invasion. The best results are obtained when the treatment is sought at the earliest stage, but in every case it should be sought, even should a month or more have intervened. Pasteur informed the writer in 1891 that on studying his atlas he found the mortality to rise with the distance which the patient had to travel from the country in which he was bitten to the Institute in Paris, being very high in those foreigners whose home was at a distance and in those whose railway facilities were very imperfect or absent.

The initial step in Pasteurism is to obtain a uniformly strong and unvarying virus capable of producing death after a constant period of incubation. This "fixed" virus is stronger than that obtainable from a rabid wolf and many times more powerful than that from a rabid dog, and is procurable only after passing the latter through the bodies of 100 rabbits. It is prepared in the following manner—

A rabbit is inoculated under the dura mater with the virus from a rabid dog, and an emulsion from the medulla of the victimised rabbit is injected into another rabbit, whose medulla is in turn used for the inoculation of a third, and so on. After each inoculation the resulting virus becomes stronger, and the incubation period shorter, till, as the virus gains in virulence, the period of incubation becomes fixed at 6 to 7 days. If a rabbit is inoculated with this fixed virus, it takes ill upon the sixth, and dies upon the tenth day. If the spinal cord of this animal is now removed and exposed in a sterilised jar or bottle to air deprived of moisture by the presence of caustic potash, and kept at a temperature of 77° F., it is found that every day produces a diminution in the power of its contained virus. After drying the cord for 8 days, and inoculating an animal with an emulsion prepared from it, death is delayed till the twenty-fifth day, and no result follows an injection of a cord dried for 14 days.

The routine is to inject into a patient bitten upon the limbs or trunk an emulsion of $\frac{1}{2}$ c.c. of a cord dried for 14 days and rubbed up with 30 mins. sterilised broth. This is done in the morning, and a similar dose is given the same evening from a cord dried for 13 days. Upon the second day injections of cords dried for 12 and 11 days are administered, and so on till upon the ninth day a single injection is administered from a cord which has only been dried for 3 days. This is the strongest dose employed during the 15 days of treatment.

For the treatment of face and head bites and wounds caused by rabid wolves a more vigorous routine known as the *intensive* method is employed, in which 1 c.c. of a cord dried for 3 days is administered as early as the seventh day, and the injections are prolonged over a period of 22 days.

The mortality after rabid wounds has by these means been reduced (from 15 per cent. in the untreated) to about 1 in 400. It must, however, be remembered that the mortality from wolf bites when untreated ranges as high as 75 per cent., and in 1901 the death-rate at the Pasteur Institute including *all* cases had fallen as low as 1 in 400, a figure which at the lowest calculation demonstrates an enormous saving of human life. In computing the death-rate those cases are omitted in which hydrophobia develops during treatment, since the incubation period is never shorter than 14 days, and hence the attack, if it occur, cannot be regarded as due in any way to the injections.

Pasteurism must not be confounded with Serum Therapy.

The essential element in the Pasteur treatment is the rapid immunisation of the bitten person by injections of an attenuated living virus along with the chemical toxin which the organisms have produced. The difference of the two plans of treatment may be realised by looking at them in the following simple way :— Suppose we bleed a patient who has just completed a course of Pasteur injections, it will be found that his blood serum is charged with a protective agent which, if administered to another subject recently bitten by a rabid animal, will prevent effectually the manifestations of hydrophobia appearing. This experiment, as far as the writer knows, has never been actually carried out, but the researches of Tizzoni and Centanni would lead one to believe that serum therapy may ultimately replace Pasteurism. These observers have injected into sheep large quantities of the virus of rabies after modifying its virulence by the action of pepsin. After a time the animals become immune to almost any dose of the living virus, and their blood serum is found to contain the protective substance in such amounts as will, when injected into other animals, render them safe from lethal doses of the virus if administered a short time before or after the serum injections. The serum is perfectly harmless, and can be dried, and in this condition preserves its properties for long periods. They calculated that 38 grs. of their dried serum will be sufficient to protect a man ten stones weight if injected *immediately* after being bitten. They advise, however, that only half this quantity should be injected at first, the remainder being used afterwards. Twice the above dose is necessary when an interval of 4 to 15 days after the bite has elapsed.

Once hydrophobia appears in an individual previously bitten by a rabid animal death may be regarded as certain ; the few reported recoveries are believed to have been cases of pseudo-rabies or of a neurosis produced by the dread of the disease. The only thing that can be accomplished by the physician once the symptoms of hydrophobia have appeared is to ameliorate the dreadful sufferings of the patient. He should be placed in bed in a very quiet and darkened room, and as few people as possible should be permitted to congregate about his bedside. Hypodermic injections of Morphia, or Opium and Chloral by the bowel, afford some measure of relief to the suffering when Chloroform or Ether inhalations cannot be tolerated. The difficulty and dread of swallowing may be minimised by painting the pharynx with Cocaine solution. Tracheotomy may ward off death from asphyxia through laryngeal spasm. Of the host of narcotics and antispasmodics, none have been proved of any curative value. The best results may be hoped from Curare ; if by its use the patient's life may be prolonged, there may be a faint hope that nutrient enemata, mild restraint, and perfect tranquillity may keep him alive till the poison is eliminated. Curare should be given in large doses ; $\frac{1}{2}$ to $\frac{1}{4}$ gr. may be injected every 20 minutes

till there are evident signs of general loss of muscular power. Some hope may be indulged in that the powerful germ-destroying action of Erhlich's new remedy—"606"—may prove of use in this hitherto fatal disease.

HYDROTHORAX.

Restricting the term "hydrothorax" to those passive effusions the result of chronic Bright's disease, and valvular lesions in which they appear generally in both pleural cavities as part of a general dropsy, their treatment is obviously that of the primary affection. In cardiac cases the exhibition of heart tonics like Digitalis which also acts as a powerful diuretic is clearly indicated. Saline purgatives are always valuable. In the effusions of renal disease, diuretics as already discussed under Bright's Disease are useless, since the function of the kidney is in abeyance, the only resource left to the physician being saline purgatives and such powerful diaphoretics as the hot pack and Pilocarpine. Tapping may be resorted to when the mechanical difficulty renders the breathing impossible. In the passive hydrothorax accompanying malignant growths in the chest, the only procedure is tapping with a fine Southey's trochar and canula, to which a thin rubber tube is attached, the fluid being permitted to drain slowly away into a vessel in which the free end of the tube is kept submerged. For the treatment of fibrino-serous effusions, see under Pleurisy.

HYPERIDROSIS—see **Perspiration, Excessive.**

HYPERMETROPIA.

This condition in which distant objects are seen indistinctly is due to an error of refraction caused by the focus of entering parallel rays falling posterior to the retina, whilst converging rays unite on it. The treatment consists in the use of a suitable convex lens which renders the eye emmetropic, in order that parallel rays may be brought to a focus on the retina.

The efforts to accommodate tax the ciliary muscle, and when lenses are not used the condition known as "accommodative asthenopia" ensues when the hypermetropic eye is strained over near objects or when the patient has been reduced to weakness by some illness. This asthenopia may be remedied by the use of glasses which meet the requirements of close vision.

Severe hypermetropia is best corrected fully, especially in children, with glasses which should be worn constantly. If strabismus is present, such glasses will remedy this complication, provided it be not constant. Where the squint is constant an operation will be required. In the case of older subjects, convex glasses of different strengths are required for near and distant vision, and these may be mounted in the same frame.

HYPERPYREXIA.

This term is applied to the condition in which a temperature of 106° F. or upwards is met with in various diseased states, notably that associated with acute rheumatism, sunstroke, typhoid fever and malaria.

The treatment of hyperpyrexia will be found detailed under the heading of each primary disease in which the high temperature occurs, but a brief summary of the usual methods may be here enumerated for convenient reference.

The new antipyretics—Antipyrine, Antifebrin, Phenacetin and other coal-tar products—are not to be depended upon. Quinine is also seldom admissible, though sometimes in the case of children it may be employed as an adjunct to other treatment, in order to prevent the temperature rising again after it has been reduced to safe limits.

The only reliable and safe method of reducing the excessive fever temperature is by abstracting the heat by means of the application of cold air or cold water to the surface of the body. The cold air plan is much less satisfactory than the hydropathic method, but occasionally in the case of children it may be employed with benefit by placing a large cradle under a sheet over the patient's naked body as he lies in bed upon a firm mattress, with a number of ice-bags suspended from the roof of the cradle.

The speediest and most efficacious of all methods and the one which is the best suited for such conditions as acute rheumatism and sunstroke, where all movement of the patient's body is undesirable, consists in "cold affusion." This is carried out with the patient lying upon a large mackintosh placed over the mattress; a single sheet being spread over his naked body, the sheet is kept wetted by a copious stream of cold water poured from a jug or watering-pot with a perforated outlet. By elevating the head of the bed and manipulating the edges of the mackintosh the superfluous water is made to flow into any convenient receptacle placed upon the floor. If the temperature of the water employed at the beginning of the affusion be about 70° to 80° F. all feeling of shock is obviated, and cold water (40° to 50° F.) will then cease to be unpleasant. As soon as the rectal temperature falls below 101° F. the sheet and mackintosh are to be removed, and replaced by blankets after the surface of the body has been rapidly dried.

The "cold or wet pack" is applied in a somewhat similar manner as the patient lies upon a mattress and blanket with a mackintosh placed between. A sheet wrung out of water at about 60° F. is wrapped around him, leaving only the head and feet free. By replacing the sheet frequently with a fresh one wrung out of cold water any desired antipyretic effect can be obtained.

The "cold bath" is used in hospital where a portable appliance and skilled attendants are always at hand. The bath being

wheeled alongside the patient's bed, he is lifted carefully out upon a sheet by two or three nurses, and the sheet is lowered into the water as he lies upon it. The temperature of the water at first should not be below 80° to 90° F., but after a few minutes it is gradually reduced to 65° or 70° F. by the addition of cold water or crushed ice, and the immersion is continued till the rectal or mouth temperature falls to 101° F., which usually occurs in about 20 minutes. A further fall to normal or even lower usually takes place after the patient has been lifted out of the bath and placed in his bed.

"Cold sponging" is not to be relied upon for the reduction of hyperpyretic temperatures unless carried out by heroic methods simulating cold affusion, but it is a valuable plan of controlling the fever heat after this has been first reduced by the bath, wet pack or cold affusion. In the case of children thorough cold sponging supplemented by gentle rubbing with large pieces of ice will sometimes act as effectively as the cold bath.

HYPOCHONDRIASIS.

Accepting Gower's definition of hypochondriasis as a morbid state of the nervous system in which there is mental depression due to erroneous ideas of such bodily ailments as might conceivably be present, the line may be drawn between it and insanity with somatic delusions, though the tendency of most modern writers is towards regarding every case of hypochondriasis as a form of melancholia.

In the graver type of hypochondriasis, the borderland between it and insanity having been already passed, the only treatment available in most cases will consist in removal to a properly equipped asylum, as the dangers of suicide must be guarded against.

The treatment of the minor forms of hypochondriasis is often most unsatisfactory and disheartening. The physician having satisfied himself by thorough and painstaking examinations that there is no organic disease present, finds himself placed in a difficulty. If he obeys his instinct and proceeds to impress upon his patient the view that his symptoms are purely imaginary, and if he makes light of his suffering, he only aggravates matters by causing him still further to concentrate all his faculties upon his abnormal feelings, this drives him to seek the advice of one physician after another till all his morbid sensations become intensified, with the result that he crosses the line dividing the sane from the insane condition.

It is in the highest interest of such a patient that the humane physician should endeavour to secure his complete and whole-hearted confidence by a thorough and sympathetic investigation of his complaints, after which he may be able to explain to him the nature of the neurosis and to convince him of the absence of any organic disease without falling into the common mistake of

arguing him out of his abnormal sensations. Any departure from the typically healthy standard should be corrected ; thus insomnia, dyspepsia, constipation, anæmia, or other disordered condition should by appropriate treatment be remedied.

Open-air treatment and exercise, especially if carried out in the company of others, boating, bathing, fishing, golf, or any active amusement in which the patient's mind is lifted off his sensations, will do more than physic. Travel, if the patient's means permit of it, if not, when possible, a complete change of employment may be advised. Resorting to spas, hydropathics or places where invalids congregate often does harm ; the patient returns somewhat improved, but with new combinations of sensations derived from comparing notes with his suffering brethren who flock about most health resorts. As a rule, anything which insures a complete change of habits and of thought is likely to be followed by benefit. Massage is often beneficial, and static electricity in some cases proves useful.

The treatment, whilst mainly moral and psycho-therapeutical, need not necessarily exclude drugs, though officious prescribing is to be discountenanced for the same reasons which should deter the physician from writing out an elaborate diet table. A drug which will diminish the excitability of the sensory terminals will do no harm, and may effect some good as in the management of hysteria. Valerian is the most suitable ; a pill containing a grain of each of the valerianates of zinc, iron and quinine is the best routine, and the addition of a small dose of Arsenic is often beneficial. As in hysteria strychnine is usually harmful. The valerianates may be alternated by a mixture containing 3 to 5 grs. Antipyrine with 15 mins. liquid extract of Coca, but narcotics including alcohol should be always avoided ; the cocaine, morphia, alcohol and chloral habits are especially liable to become developed in such patients.

HYPOSPADIAS.

Where the deficiency in the floor of the urethra is confined to that part of it which traverses the glans, the case will require no interference unless there should be a constriction or stricture at the outlet of the passage which may require dilatation. Where the deformity exists in the penile portion of the urethra there is usually much curving of the penis, and urination causes great discomfort from the direction in which the stream flows ; it will be necessary to remedy the arching of the penis by a deep and free incision made in a transverse direction across the median groove. By extending the organ and suturing the margins of the wound in the vertical direction the penis becomes straight. Afterwards a new floor for the urethra may be made by dissecting a flap from the cutaneous covering of the lower part of the penis or scrotum.

When the floor of the urethra is absent as far as the perineum

the condition resembles that which is seen in some Australian tribes. The writer exhibited, many years ago, a specimen of artificial hypospadias, which he found in an aboriginal of the interior of Australia. He ascertained from an explorer that at least one tribe in the centre of that Continent performs the serious operation of slitting the male urethra open from the glans backwards, through the perineum towards the bladder, evidently with the view of preventing procreation. A careful examination of the specimen proves to what extent the most serious plastic operations may be carried out when recovery follows a barbarous mutilation undertaken without anatomical knowledge, and performed with the crudest of instruments, and without the slightest conception of the necessity of aseptic methods.

The treatment of the congenital variety of this perineo-scrotal hypospadias which simulates hermaphroditism can only be carried out by a very elaborate and extensive series of plastic operations which seldom prove successful. As the determination of sex is often impossible in these cases it is a wise rule to bring up the child on the supposition of its belonging to the male sex, and not to attempt surgical interference with the deformity.

HYSTERIA.

The *prophylaxis* of hysteria is an important problem, the solution of which becomes imperative when the mother of neurotic children is deeply tainted herself with the neurosis. As it is usually impossible to prevent the patient speaking of her ailment in the presence of her children or of dealing in a rational and firm manner with any neurotic symptoms which may appear in them, the question of separation becomes an important one. As a rule it is easier to send the female children to a school at a distance than to remove the parent for a prolonged sojourn in a nursing home.

The elements of preventive treatment suitable to a neurotic child are essentially the same as those indicated for the cure of the hysterical condition in older patients.

As soon as any hysterical manifestation shows itself the general health of the patient should be carefully looked into. Her diet should be liberal and administered with frequency and regularity. Active open-air exercise should be insisted upon, even to the extent of producing slight fatigue. Regular hours for rest are essential. Everything which over-stimulates the hypersensitive cerebral centres is to be avoided, as is also every excitement of the emotions or passions. Healthy and constant mental occupation should be advised, with avoidance of the evils attendant upon social dissipations, with their late hours and unnatural excitements. Few things are so detrimental to precocious neurotic children as the modern institution of juvenile at homes and late dancing parties. Sound, wholesome literature, instead of the maudlin, sentimental trash of cheap novels, should be sup-

plied as food for the mind, care being taken that the patient be not permitted to tax the memory or perceptive faculties too severely. Recreations or exercises, as sketching, painting or music, are certainly to be preferred to mechanical needlework or lace-making, which permits of too much introspection and moping. Sea bathing and the morning cold bath when admissible are valuable adjuncts; the patient should be strongly advised to retire early to bed and to persist in early rising, and take some mild form of exercise before breakfast.

Errors in digestion or assimilation require to be remedied. Anæmia calls for iron; menstrual disorders, constipation and all sources of peripheral irritation as errors of refraction, adenoids, &c., should be dealt with on approved principles.

The main element in the treatment of hysteria must be moral or suggestive, and directed to the strengthening of the inhibitory power of the conscious self and the educating of the subconscious self as in the preventive treatment of insanity. (This principle has been carried beyond the limits of practical therapeutics in the method of treating hysteria carried out recently by Freud, which consists in the application of an elaborate method of psycho-analysis by means of which a complete *mental catharsis* is effected, the patient being aided or compelled by the physician to recall the events in her life associated with the onset of her illness. The lapsed subconscious elements in her psychic experience being thus brought under the influence of her conscious self, improvement is expected to follow. The plan requires repeated sêances, and is open obviously to dangerous abuses; the confession of sexual incidents and temptations is liable to induce a degradation of self-respect in the patient and a disgusting experience to the physician.) Though the neurosis is not to be regarded as a form of insanity, the mental state of the patient demands the most careful hygienic management. As in many forms of insanity home treatment is usually unsuccessful, so in hysteria the best results are only obtainable in confirmed cases by removal to a good nursing home in which complete isolation from her friends is rigidly carried out.

In the early stages of hysteria before isolation is pronounced to be necessary, an attempt may be made to treat the patient at home if her relations possess sufficient tact and firmness to carry out moral treatment alone or with the assistance of a skilled nurse. The physician should take her relatives into his confidence, and make it clear beyond the possibility of being misunderstood how her case stands. This is generally only half attempted, and her friends too often interpret the physician's remarks as meaning that the patient is either malingering or labouring under some delusions or fancies. Consequently their management of her, with this erroneous impression, is fraught with disaster. The co-operation of a strong-minded, judicious relative, possessing tact and firmness, though not devoid of

sympathy, but capable of suppressing sympathetic manifestations, is of infinitely more value than drugs. The influence of such a mind operating upon the victim of hysteria can be guided by the physician in such a way as to strengthen the patient's will-power and enable her to successfully combat the tendency to yield to displays of emotional disturbances. Lecturing or scolding the patient continually is to be condemned, and ridicule is most injurious. Each case must be managed as the judgment or tact of the physician directs. Sometimes the influence of the strong will of the physician may accomplish results which appear as almost miraculous, but these can only be obtained after he has entirely gained the complete confidence of the patient by a comprehensive study of her various symptoms, and convinced her that there is no mystery in her ailment and that *recovery is certain* if implicit obedience to instructions is maintained. Manifestations of sympathy and the attachment of undue importance to individual symptoms are as fatal to successful treatment as is the ignoring of these altogether by the physician—extremes which the well-balanced medical mind always avoids.

It must always be remembered that drugs should be considered as of secondary importance when compared with the moral treatment. Valerian has long enjoyed the reputation of being the most valuable member of this class of remedies. To be of any use, however, it must be given in doses much above the strength of those usually employed. Drachm doses of the simple tincture, or an equal quantity of the ammoniated preparation freely diluted, may be given three or four times a day, or the following pill may be administered—

R. *Zinci Valerian.*

Quininæ Valerian.

Ferri Valerian. ana gr. j.

Extracti Valerianæ q.s. Misce.

Ft. pilula. Mitte tales xxiv. Sumat unam ter in die post cibos.

Valerian and Asafoetida are regarded erroneously by some physicians as part of the moral treatment of hysteria, producing their good effects through the patient being compelled to swallow something nauseous and disgusting. Valerian benefits the hysterical condition in no such way, but it does good by diminishing the hypersensitiveness of the peripheral nervous apparatus, rendering sensory stimuli less powerful to affect the hypersensitive and unstable nerve centres. Asafoetida acts probably in the same manner, and Sumbul and Musk have similar action in less degree. Antipyrine in small doses intensifies the good effects of these drugs. Borneol-isovalerianate or Bornyval is an elegant and efficacious substitute for valerian when given in

4-min. capsules, and it is hardly conceivable that it could act upon the moral or suggestive hypothesis; moreover, some hysterical patients manifest no marked repugnance to the tincture of valerian or of asafœtida, though they continue to derive benefit from them.

Bromides are of value where there is evidence of insomnia and sexual excitement or ovarian tenderness. Their routine administration, especially in lean subjects, is productive of much mischief. They are certainly more suitable and more clearly indicated in the class of hysterical patients from which the Continental physician forms his experience, and which is seldom met with in Britain.

The writer has found that Strychnine almost invariably intensifies the hysterical phenomena, probably through its power of rendering the peripheral and centric sensory portions of the nervous system more acutely sensitive. Alcohol, morphia, cocaine and chloral must be always avoided owing to the great danger of the establishment of a habit in hysterical patients; when hypnotics are indicated the newer drugs as Trional should be employed.

When the alteration in the patient's environment, habits and diet, with improved hygiene and moral and medicinal treatment, fail in dispelling the manifestations of the neurosis, the only source left to the physician is to insist upon Weir-Mitchell treatment and rigid isolation for a period of 8 or 10 weeks. By this treatment cases have been brought under easy and rapid control which hitherto have been considered altogether outside the sphere of practical therapeutics. It is only in such grave cases that the method in its entirety should be recommended, and it is contraindicated where marked melancholic symptoms are present or where any serious organic lesion is known to exist.

Isolation must be complete; the patient therefore should be removed from all her friends and relatives and placed in a suitable nursing home with a reliable and well-chosen nurse, the character and experience of whom must be of the highest order, as absence of skill in the nurse is as serious an obstacle to success as is want of experience, tact and firmness in the physician. Isolation must exclude all intercourse by correspondence or letters with the patient's relatives till the treatment has been wellnigh completed; she should see no one but the physician, nurse and masseuse. Should such arrangements not be thoroughly accepted by the patient and her friends before her removal, the physician should frankly decline to carry out the treatment after explaining to them that without complete isolation failure is sure to follow.

Absolute rest of body and mind is the next essential; the patient not being permitted even to stand upon her feet for a moment, just as if she were suffering from severe typhoid fever. She is not permitted to use her arms or hands, being fed by the nurse

as a child. Books, games, sewing and usual ordinary harmless occupations are forbidden for the first few weeks, the routine of life being made as monotonous as possible so as to arouse longing for a new existence and create a desire to enter fully into the spirit of the treatment in order that recovery may be achieved as soon as possible. After 2 or 3 weeks the nurse may be permitted to read to her, and the other restrictions may be gradually withdrawn, letters being allowed from home at the end of the third or fourth week. It is wise to maintain the horizontal position in all severe cases for at least 6 weeks.

Overfeeding is the third factor in the treatment. Milk alone should be given for the first ten days, at frequent intervals, and gradually increased as massage is commenced, until enormous quantities are consumed. After three or four days sometimes 6 or 8 pints are swallowed daily. Strong beef tea, chicken soup, meat jellies, tea, coffee, chops, fish, steaks, poultry, eggs, bread and butter, oysters, oatmeal porridge, vegetables of all kinds, puddings, and any form of plain, wholesome, digestible food may be administered in very large quantities.

Massage is an important part of the treatment. It should be commenced upon the third day and be carried out in the most thorough manner, gradually extending the operation till an hour's good deep kneading of the muscles and tissues of the body can be borne by the patient. In bad cases two applications lasting for three-quarters of an hour each, morning and evening, may be required. At the beginning it is well to confine the operations to the extremities, and the movements should be limited to the superficial structures. Afterwards the deeper tissues and muscles may be kneaded till in a few days the entire body, excepting the head and face, receives a fair share of manipulation.

In this way the blood and lymph circulations are greatly stimulated, effete products are washed away, waste materials being removed, and fresh pabulum brought with great rapidity to the refreshed tissues. The increased amount of nourishment is thus used up to the greatest advantage, and the patient's body weight increases to an astonishing extent. Wasted muscles and emaciated limbs become plump and agile, and the change in the patient's aspect and dimensions is such in 10 or 12 weeks' treatment as to tax the credulity of those who had not previously witnessed the success of the treatment.

Hydrotherapy is now usually added to the other elements of the Weir-Mitchell treatment; it may be commenced with cold sponging after each massage séance, the warm, tepid and finally the cold bath being indulged in every day after the third week of treatment. Douches and cold sprays to the spine may follow the warm or tepid bath advantageously, and the needle bath is often very valuable when spasmodic seizures are threatening.

Electricity is the last element in the Weir-Mitchell plan of treating hysteria. The uses of electricity will be more fully

mentioned under the head of the treatment of the local manifestations in the following pages. When used as a factor in this method it is employed as an adjunct to massage. The interrupted strong current is selected, and the various muscles or groups of muscles are thrown into contractions. The moral effect produced upon the patient by demonstrating that the muscles which she believed to be permanently paralysed are still capable of active movement should be further strengthened by suggestion on the part of the physician whose way is thus opened up to the successful persuasion of the invalid to exercise her feeble will upon the muscles. Each attempt at voluntary movement may be assisted by the electrode if this is applied at the psychological moment.

After the conclusion of the Weir-Mitchell course it is a good plan to insist upon the patient having a change to a seaside resort before returning to her home.

Of late years hypnotism has been employed in the treatment of hysteria, but the physician will be wise who leaves the use of this remedy to those few who have made a study of it. Consciously or unconsciously he is successfully employing suggestion all through the treatment every time he assures the patient that she is certain to get well and every time that he confidently states that the remedies, medicinal, dietetic, &c., are certain to do good.

It is this element of suggestion which adds therapeutic value to many drugs from time to time prescribed for the disease, and which cannot conceivably act in any other way. Thus the hypodermic administration of a little saline solution is often followed by astonishing results, and Lutton and Crocq were led to state that in the allied neurasthenic condition 75 mins. injected every month enabled weakened and invalided patients to develop energy sufficient to fit them for earning a living. The injection of brain matter, cardin and other organic products act in a similar manner.

Special symptoms will require individual treatment, thus—

The most serious condition which the physician can be called to treat is that in which the line between hysteria and insanity has been already crossed by the patient; Weir-Mitchell treatment as ordinarily carried out in a nursing home is not suitable in such cases, and the only resource left is to send the sufferer to a properly equipped asylum.

Convulsions.—When the physician is called to a patient during an attack of convulsions or of hysterical coma, if he be confident of the accuracy of his diagnosis, he can have the satisfaction of often bringing the fit to an abrupt termination, after dismissing the sympathetic and alarmed bystanders. The patient, if in bed or upon a sofa, is so placed as to enable the physician to pour a stream of cold water suddenly from a height upon her face, without saturating the bedclothes or garments of the patient. This free douching is soon followed by a return to complete consciousness, and in subsequent fits the mention of it is often enough

to arrest all symptoms. Sometimes a little cold water thrown forcibly against the face acts like magic, but the physician should state in the hearing of the patient that the application is to be repeated every 2 or 3 minutes till she gets out of her attack. Pinching the nostrils whilst the mouth is kept closed, so as to arrest the breathing entirely for a short period, may arrest an attack instantly. The vapour of strong Acetic Acid or Liquor Ammoniaë to the nostrils may produce the same good result.

Deep pressure over one ovary sometimes arrests a fit of convulsions or of coma, but it often fails; and when it does appear to arouse the patient it leaves her in a very excited and excitable condition. A better plan is to make firm pressure upon the supra-orbital nerve as it emerges from its bony canal.

Electricity is always of value if at hand, and by placing one electrode over the front of the neck and the other over the pit of the stomach a smart interrupted current may stop the paroxysm in a few seconds. It has no such effect in epilepsy, and may be used therefore as a means of arriving at a positive diagnosis of the nature of the convulsion, and so strengthening the physician's confidence in proceeding upon moral or suggestive lines.

Deep pressure upon the arteries and tissues at the base of the neck, so as to interfere with the cerebral circulation, as is sometimes successfully tried in stopping epileptic fits, may cut short the attack of hysteria or hystero-epilepsy; firm pressure on almost any region of the body will often act effectually in controlling hysterical phenomena.

In the treatment of all the acute symptoms of hysteria the room should be cleared of all active sympathising spectators, and the physician should give his orders and carry out his operations without the least sign of hesitancy or wavering. This latter he cannot do unless he be very positive about his diagnosis; indeed, little can be done with hysterical patients as long as the physician has any doubt whatever lingering in his mind about the case being one of the genuine neuroses. The patient by intuition recognises his want of confidence in himself, as shown by some very trivial circumstance, and the result is that the demon refuses to be exorcised and his efforts prove futile to control the manifestations.

Where the coma has lasted for a considerable time and the douche or electricity has failed, the application of a hot caustic iron gives prompt results. The writer has cut short attacks of both convulsions and coma by giving directions in a loud and firm tone of voice for the heating of an iron and the ordering of a portion of the skin to be exposed for cauterisation. He has, however, never seen a case where the actual carrying out of this measure appeared to be justified. Nitrite of Amyl sometimes arrests the paroxysm, and a hypodermic of Apomorphine to effect emesis is also a potent agent.

The paroxysm of coma, or convulsions, or delirium having

been arrested, the routine moral treatment already detailed should be firmly instituted and carried out with patience and perseverance.

The various local forms of *Paralysis* should be treated by the means recommended as useful for the general hysterical condition. Massage, passive motion and electricity employed locally afford, in conjunction with moral treatment, the best hope of success. The same measures prove useful in dealing with *contractures* or flexions of joints, which are also successfully removed by the application of a circular blister around the joint. The Weir-Mitchell method of treating contractures consists in the injection of Atropine into the contracted muscle before attempting massage or passive motion. Swedish movements and gymnastic exercises are always beneficial. The method of employing these therapeutic agents will vary with the locality and nature of the affected parts or organs. Where there is much pain and tenderness over joints or bony prominences a sponge as hot as can be borne without risk of vesicating may be employed with benefit.

Aphonia may be treated by voice exercises and the methods described under Aphonia on p. 53. It yields readily to electricity, which may be employed in various ways for the treatment of this affection. By the aid of the laryngeal mirror one electrode is placed in contact with the vocal cords, the other being fastened to the outside of the larynx. By a button in the handle of the interior electrode the current is turned on, and the shock often causes the patient to instantly find the use of her voice, perhaps for the first time for many months. The applications should be repeated till the aphonia entirely disappears. Sometimes one sitting of a few minutes suffices, but more commonly several are required to insure that no return of the aphonia occurs. The Faradic or interrupted current should be used, and contact may be made 5 or 6 times during each sitting.

Static electricity may be used; it is preferable to galvanism and its effects are more lasting. It may be used in a variety of ways, the simplest being that of passing a series of shocks through the larynx from a Leyden jar. As the aphonia is, however, only one of the many manifestations of the hysterical state, it will be advisable to administer the static electricity in a way that will affect the entire system. The simplest and mildest method of using it is to place the patient on an insulated stool or in an insulated chair, and by means of a metal foot-plate to connect her body with the positive pole of a Carré, Holtz, or a Wimshurst machine. This condition of continuous positive electrification is called the static bath. By changing the poles, negative electrification is produced and a series of sparks may be drawn by approaching a large brass electrode to the patient's body; or the static breeze or spray may be employed by using an electrode with numerous points.

McClure insulates the patient, and for the first two sittings

administers the bath ; afterwards by bringing a wooden ball close to the skin, but not close enough to produce a spark, he moves it in all directions over the body. When the paralysed part or an area of *anæsthesia* is approached the ball is laid aside, and sparks (light or heavy) are extracted by means of metal electrodes. Aphonia may be similarly treated by drawing sparks from the skin over the larynx.

General Faradisation may be employed in hysteria, as static electricity is administered by the static bath, in order to bring all parts of the body under the influence of the current. With her naked feet the patient stands upon a large metal disc or moistened sponge electrode connected with the negative pole of the battery, and the physician places himself in connection with the positive pole through a wire held in one hand, with the other he holds in contact with the patient's body a large metal ball enveloped in a moistened sponge. The current thus passes through his body, and also through the patient as it passes from pole to pole. In the same way Galvano-Faradisation may be employed as by de Watteville's method. High-frequency and sinusoidal currents and the hydro-electric bath are also employed ; the effects obtainable are probably due entirely to suggestion.

Cutaneous hyperæsthesia is best dealt with by static electricity as just described by drawing sparks from the affected regions as in local anæsthesia ; it also will yield to smart counter-irritation or the cautery.

Vomiting when purely hysterical may be suddenly stopped by a light application of the cautery to the skin of the epigastric region, and hysterical *hiccough* yields readily to the same treatment. When either symptom shows a tendency to return a mustard-leaf or a cantharides blister may be applied, or Faradism or static electricity may be employed.

Anorexia Nervosa is best dealt with by a course of Weir-Mitchell treatment, and as in the treatment of obstinate hysterical vomiting the food introduced into the stomach by the siphon may be retained and digested thoroughly, whilst that administered in the normal way is usually rejected and remains for a long time unchanged in the organ. Rectal feeding is generally useless.

Hystero-Epilepsy.—The treatment of this apparently formidable malady (major hysteria) is to be carried out upon the same lines as are indicated for the management of a patient suffering under a severe convulsive seizure. Nitrite of Amyl in the writer's experience sometimes proves of decided value in bringing the attack to a speedy conclusion, and Pilocarpine has been credited with similar powers. Bromides in full doses, though not capable of effecting the good results observable in epilepsy, occasionally may be found to lessen the tendency towards the repetition of the seizures. Prolonged Weir-Mitchell treatment is clearly indicated. The various Continental methods of treating the manifestations of the severer forms of hysteria by the application

of magnets (metallo-therapy) and other agents need not be discussed; they can only exercise any benefit through the influence of suggestion, which may be more rationally employed by other methods.

ICHTHYOSIS.

Reliance must be chiefly placed upon *local* treatment in this congenital and often hereditary skin condition, though Pringle has reported good results from Thyroid feeding, and Jackson states that he has cured it by irrigation of the colon, and others affirm that Pilocarpine hypodermically is always of use. Cod-Liver Oil is certainly beneficial in all cases, and especially in the mild type of the condition known as *Xerodermia* or *Keratosis pilaris* these agents may be advantageously employed to supplement local treatment.

The scales or plaques the result of the keratinisation of the epithelial cells must first be removed by prolonged immersion in a warm bath, with gentle scrubbing and the use of a Superfatted Soap, Borax, Resorcin or Salicylic Acid. Often a weak alkaline bath meets all the requirements if sufficiently prolonged and assiduous friction be employed by means of hair gloves.

After drying the surface a bland, unirritating animal oil or fat should be gently rubbed in till the skin is brought to the natural suppleness. Lard Oil or Neat Oil is the best, but any vegetable oil may also be used, and a pure Olive Oil, such as is used for salads, is free from objectionable odour. Vaseline or Glycerin may be used for the exposed parts of the body, but upon the whole the face and hands are best treated by pure Lanolin, which should be gently rubbed in till it disappears. Suet or Cacao Butter answers well in some cases, and Pringle prefers the official Glycerinum Amyli. Jamieson uses an ointment consisting of the following:

R. *Resorcini* ʒj.
 Olei Amygdalæ ʒj.
 Lanolini ʒiij. *Misce.*

The bath should be used once each day for long periods, but the inunctions should be performed twice a day. When the skin has been brought to its natural feel and appearance, a hot bath once or twice a week and a daily application of the oil will keep the subject of simple ichthyosis in a tolerably comfortable and presentable condition. Mild cases get on with one thorough inunction in the week. In a case occurring in a weak, thin boy the writer had an excellent result from one thorough application of Cod-Liver Oil every week, but the odour of the oil is a great drawback to its employment.

Flannel should be worn next the skin, and in some cases great

comfort and benefit may be obtained from chamois or wash leather under-garments. Where eczema exists the weeping surface or fissures must be treated by emollients before resorting to the alkaline bath and friction.

In *Ichthyosis Hystrix*, where there is much hardening, the callosities may be excised or gently scraped with a curette, or dissolved by the application of a lotion consisting of one part of the B.P. Liquor Potassæ in two parts of water.

Sodium Ethylate Solution or Salicylic Acid dissolved in Colodion may be more conveniently used to destroy the growths, and will not cause injury to the underlying skin. After the removal of the cakes, an ointment containing 10 grs. of Iodide of Potassium in solution rubbed up with 1 oz. Lanolin may be used with advantage. Resorcin (10 per cent.) or Naphthol (5 per cent.) ointments may be tried in the later stages of treatment, or 1 dr. Resorcin added to each ounce of Glycerin. Amyli may be applied.

ICTERUS—see Jaundice.

IMPETIGO.

Under such names as *Porrigo*, *Ecthyma*, and *Impetigo contagiosa*, this cutaneous staphylococcic infection is recognised as identical with the so-called Football Impetigo and other epidemic types of impetigo.

It is probable impetigo cannot exist or flourish upon a perfectly healthy person, hence the importance of looking after everything which improves the nutrition of the body. As there is always some departure from the healthy standard, feeding, exercise, fresh air and absolute cleanliness must be attended to.

The first step in the treatment will consist in the removal of the yellow crusts and the exposure of the raw oozing surface upon which the cocci are multiplying. Bathing of the parts in warm water should be followed by a Boric Acid poultice, after which the application of any *weak* antiseptic as Diluted Citrine ointment or the Ungt. Hydrarg. Ammon. diluted with twice its weight of lanolin or of zinc ointment suffices. Where the eruption is scattered over a considerable area of the body, warm baths containing Permanganate of Potash or a trace of Perchloride of Mercury should be administered. The inner clothing should be carefully sterilised, and care should be taken to avoid scratching with the finger-nails, whereby the cocci are transplanted from one region of the skin to another.

Porrigo is the usual term applied to impetigo of the scalp, and the condition is generally complicated with pediculi invasion. The scabs should be soaked with Paraffin Oil; warm bread and water poultices will be often required in addition to persistent sponging till the crusts are removed, after which the hair should be cut close, the entire scalp washed with saturated Boric Acid

solution, and an ointment consisting of one part of White Precipitate ointment and two parts of Zinc ointment should be freely rubbed in.

IMPOTENCE.

Mechanical impediments to the sexual act should be met by appropriate surgical measures.

Functional causes supply the majority of the cases seeking advice, and many of these are in recently married individuals to whom much mischief may be done by the administration of powerful drugs.

The situation arises from ignorance and nervousness, and produces sometimes a dangerous depression of spirits. The majority of cases of this nature right themselves in a short time if left alone, and all that is generally necessary is a little sound advice and no drugging. The stereotyped instruction to rigidly abstain for a time from all attempts at sexual intercourse is a mistake, unless under special circumstances; nature generally soon sets matters right. This is especially true in those cases where emission occurs before penetration has taken place, and then a successful coitus may take place when the act is attempted again a short time after failure. Moral treatment is all that is necessary in most cases where the incapacity is imaginary.

In paralytic cases where impotence arises from previous recent excesses, but where the generative organs have not apparently suffered structurally to any obvious extent, total abstinence from all attempts at intercourse must be rigidly advised till evidence is forthcoming that nature means to assert herself. During this period vigorous exercise, with good living and abstinence from alcohol, with the daily use of the cold shower bath or sea-bathing and tonics, are very useful. Of tonics Iron in full doses of the tincture of the perchloride in combination with Strychnine is the best, and Easton's Syrup of the phosphates is a valuable preparation. It should be given three times a day in doses of at least 1 dr.

Aphrodisiacs as a rule do harm, and should not be prescribed in these cases. The mere production of an erection is a very different thing from power to perform the sexual act successfully, and these artificial aids generally fail, and after each failure the position of the patient is decidedly worse. For this reason he should be urged not to attempt the act till he feel that he has reason to believe that the attempt will be more successful than the last, and in most cases the patient's own sensations will be his best guide.

When this treatment fails to cure the impotence, other measures remain, and these may at once be resorted to without waiting in those cases occurring after middle life, or in those who have indulged in sexual excesses, or in masturbation to the extent of causing atrophy of the testicles or penis. In such patients there is

often weakness of sexual desire, but sometimes it is not diminished, and the physician finds that the mental depression associated with the impotence is so serious as to call for active treatment in order to prevent hypochondriasis or other form of mental disease.

Electricity in the treatment of premature loss of virility comes next in value to abstinence and the general hygienic measures just mentioned. This remedy may be used in various ways. The writer has observed that the best results follow from the employment of a moderately strong continuous current. One large sponge-electrode being placed over the lower end of the spine, the other is applied to the groin, spermatic cord, testicles, penis and perineum in succession. The sitting should last for 20 minutes, and may be repeated twice a day. The interrupted current may be employed occasionally with advantage for the space of about a week, during which the continuous is suspended. Benefit may sometimes be obtained from the wearing of a good Pulvermacher chain battery round the pelvis or loins.

Massage or gentle kneading of the scrotum and testicles, followed by free sponging of the parts with cold sea-water twice a day, has a decided influence in improving the tone and nutrition of the generative organs, and should always be tried in conjunction with electricity.

When the only defect is a purely functional one arising from some deficiency in the apparatus necessary for erection, authorities speak highly of *Cantharides* in small doses—5 mins. of the B.P. tincture—or of *Phosphorus*. The writer has never prescribed these remedies for this purpose, and is doubtful of their utility. *Damiana* has proved itself to be an aphrodisiac of considerable power without doing harm, in most cases of loss of virility due to early sexual excesses or premature weakness of the genito-urinary centres in the cord. It may be advantageously combined with *Strychnine* as in the following :

R. *Ext. Damianæ Liq.* (1 in 1) *ʒiiss.*

Tinct. Nucis Vomicae *ʒv.*

Sanmetto ad *ʒiv. Misce.*

Ft. mist. Capiat ʒj. ter in die post cibos ex aqua.

Yohimbine Hydrochloride is a more powerful though comparatively safe drug obtained from *yohimbehe* bark. It is procurable in $\frac{1}{13}$ -gr. tablets, of which one to three may be given thrice daily or 10 mins. of 1 per cent. solution may be administered. Hypodermic injections of *Poehl's Spermin* (15 mins. of 2 per cent. solution) and 5 gr. doses of *Orchidin* or of *Didymin* by the mouth are highly recommended.

Where the impotence occurs as the result of some organic or functional disease it may reasonably be expected to pass off when the affection is removed, and it is needless to say that appro-

prate treatment should be directed to the mischief of which it is symptomatic. Thus in diphtheritic paralysis, lead poisoning, renal affections, neurasthenia, diabetes and ataxia, impotence may be the condition which first directs the patient's attention to some departure from health.

When the loss of virility supervenes upon head or spinal injuries the best hope of success will lie in the judicious administration of small doses of Perchloride of Mercury ($\frac{1}{40}$ gr.), or of $\frac{1}{24}$ gr. of the Chloride of Gold and Sodium, or of 5 grs. of the Iodide of Potassium. Phosphorus and Strychnine should be used with the greatest caution in such cases. After a few weeks or months of this treatment the use of a weak continuous current, passed through the cerebrum for a few moments and followed persistently with galvanism of the spine from the head to the sacrum, will accomplish all that drugs can be expected to achieve. It has been noted in locomotor ataxia that after suspension in some cases impotence for a time disappears. The writer has, however, observed the spontaneous temporary disappearance of impotence in one very advanced case where this symptom had been marked for many years.

INCONTINENCE OF URINE, AND ENURESIS.

After middle life urinary incontinence is most frequently the result of prostatic enlargement and can only be successfully dealt with by radical surgical measures. The physician must always be on his guard against mistaking the dribbling overflow from a distended bladder for incontinence, a condition which is very liable to arise during the course of prolonged fevers as in typhoid and other affections where neglect of catheterisation will tend towards a fatal result; when any doubt exists the catheter should invariably be used. Incontinence due to vesico-vaginal fistula, to the presence of prostatic or urethral concretions, or to structural bladder or urethral diseases or deformities must be dealt with surgically.

Of a different kind altogether is the neurosis known as *nocturnal incontinence* or *enuresis* which is common in male and female children as the result of the survival of the purely reflex nature of the micturating act in the infant. There is usually nothing abnormal during the waking hours in the functions of the bladder in these cases, and there is no dribbling away of the urine at night, which is passed in a full stream during sleep.

The first step in the treatment should be the removal of any cause which tends to keep up peripheral stimulation or irritability, when any such is discoverable; it must not be forgotten that the causal agent may be located at a long distance from the bladder, as the presence of adenoids has been frequently demonstrated to be an effective factor in enuresis, though there may not be increase in the frequency of micturition during the waking hours.

Of the sources of stimuli arising within the genito-urinary tract itself the most frequent are pinhole opening in a narrow foreskin, a very long or adherent prepuce, or a bladder calculus, though the latter cause will probably also lead to vesical disturbance during the waking hours, and the same remark holds true for hyper-acidity, hyper-alkalinity, and *Bacillus coli* in the urine, all of which should be met by appropriate remedies in every instance where the urine is abnormal. The presence of thread-worms should be sought for, as these migrate from the anus at night and may set up smart vulvar irritation and anal pruritus; obstinate constipation acts in the same manner.

In many cases, however, no obvious source of peripheral irritation can be detected. Before resorting to drug treatment the physician should supervise the arrangements of the patient's meals, sleeping hours, &c. The diet should be plain and unstimulating, late meals and especially fluids before bed-time being forbidden. Restricted diet is a mistake. A careful nurse or mother soon finds out what articles of food or what beverages are followed by any aggravation of the symptoms, and these can be avoided. As a rule a strong animal food dietary is objectionable, but some children are worse upon a pure farinaceous diet, with slops. The bedclothing should not be too heavy, and a hard mattress is preferable to feathers. The child should be taught to lie upon either side, and sleeping upon the back may be prevented by fastening an empty cotton-reel or bobbin or spool by means of a tape round the chest. This will awaken the patient when he turns over upon his back during the night, and feels the hard substance pressing against his spine. It is certainly the case that some children will not suffer from nocturnal enuresis unless they turn over on their back in bed.

The great secret of the successful treatment of this condition lies in careful and conscientious *nursing*. The writer speaks from the experience of several hundred cases treated during the last 30 years in a large industrial school where the complaint was constantly met with in a considerable number of the younger girls residing in the institution. After the child has emptied the bladder he should be made to go asleep upon his side, and he must be lifted out of bed within a couple of hours and made to pass urine again, the operation being repeated in 3 or 4 hours and again before the usual time of getting up. A sensible and reliable nurse soon learns the peculiarities of each patient, and discovers the hours and number of times when such awakening is necessary as the intervals are gradually lengthened. The great majority of cases will respond to this plan of treatment alone without drugs, though in every case these may be judiciously employed to shorten the duration of the period of nursing.

Even the threatening of punishment may seriously aggravate the condition in hypersensitive children, and any form of punishment is reprehensible. Suggestion may be legitimately tried in

patients old enough to be impressed strongly by the physician's confident assertion that they will certainly get over the habit of bed-wetting.

Belladonna is the most reliable drug, but to be of service it must be pushed till its physiological action is obtained in a mild form. It can only be of use in doses capable of partially paralyzing the bladder. Children bear belladonna well, and some show remarkable tolerance of the drug, but there is difficulty in proportioning the proper dose, and no rule can be given to fix the quantity exactly for any given age. A child 3 or 4 years old may get 3 mins. of the B.P. tincture in the afternoon, and again in the evening before bed-time. This may be gradually increased till 10 mins. are reached, if dryness of the throat and dilatation of the pupils are not observed. It is this great difficulty in arranging the dose of the drug which has led to failure. The physician must be careful not to leave the increasing of the medicine in the hands of inexperienced nurses. There is practically no danger in keeping up the action of the drug for two or three weeks, after which it may be gradually diminished, as the bladder soon recovers its normal rhythm when the micturating habit has been thoroughly broken for a short time. Atropine as a rule should be avoided, since the tincture of belladonna has been standardised, but some physicians recommend the hypodermic injection of 1 min. of the liquor in the case of a 4 year old child before bed-time, the quantity being doubled for a child 15 years old, but these doses sometimes produce delirium.

Tincture of Hyoscyamus may be substituted for the belladonna preparations, and it is especially indicated where the bladder is irritable during the day-time. As a rule the belladonna should not be administered in the forenoon hours. Bromide of Potassium has now and then given good results, but is very much inferior to belladonna. It may, however, be combined with it advantageously. The following mixture may be prescribed for a child 7 years old:

℞. *Tincturæ Belladonnæ* ʒiij.
Potassii Bromidi ʒv.
Syrupi Simplicis ʒj.
Aquæ Floris Aurantii ad ʒiv. *Misce.*

Fiat mistura. Cujus capiat cochleare unum minimum, mensurâ, vespere et hora somni.

The combination of Strychnine with belladonna has given excellent results in atonic cases; 2 mins. liquor strychninæ may be combined with each dose.

Chloral Hydrate has been highly recommended—the writer has found it to increase the mischief; like Cannabis Indica, Opium,

Codeine, and other narcotics, it would appear as if the dreaming which follows the administration of narcotics to children is very liable to excite the bladder, and often an intelligent child will state that he always dreams that he is micturating before he wets the bed.

Sumach (*Rhus aromatica*) has given excellent results. Unna states that it acts upon the muscular fibre of the bladder. The writer has used it in the case of a young adult with considerable amelioration of the symptoms. The fluid extract (1 in 1) may be given 3 times a day in doses of 5 mins. to children under 2 years, and 10 mins. to children of 8 years old. *Rhus Toxicodendron* (*Poison Ivy*) in small doses has been found to check incontinence of urine, but in no way is it superior to the *rhus aromatica*, and it may cause irritation of the stomach and bowels. Antipyrine has been proved effectual by Phillips, who gives 8 to 10 grs. to children 7 years old and increases the dose, continuing the drug for 3 or 4 months without injury. Lycopodium and Ergot have also occasionally proved useful in atonic cases, and Cantharides in minute doses has sometimes given good results.

A recently introduced method of treatment has been favourably reported upon; it consists in injecting from 2 to 5 drs. Normal Saline Solution into the sacral canal, the puncture being made over the termination of the sacral epidural space at the last sacral vertebra, but the writer has never seen a case which required such a procedure.

Some physicians advise blistering the sacral region, and Harkin reported good results from painting the upper cervical spines with Liquor Epispasticus. It is just possible that these methods act by preventing the child sleeping upon the back.

Painting the orifice of the urethra over with Collodion, or encircling the penis with plaster or an elastic band, are generally futile procedures.

Electricity when there is an atonic condition of the sphincter has proved very useful in some cases, but its effects are transient. Picard applies one pole to the membranous part of the urethra in boys, and to the entire urethra in girls, and places the other pole above the pubes.

When conscientious nursing in combination with belladonna, hyoscyamus or rhus fails, a trial may be made of passing a graduated bougie or sound into the bladder in order to stretch the posterior urethra. If no result follows, a few drops of Nitrate of Silver solution may be lodged in the prostatic portion of the canal by means of a suitable syringe attached to a rubber catheter. In girls the solid nitrate may be applied to the entire urethral passage.

Obstinate enuresis in young women may be treated by injecting 3 to 5 grs. Nitrate of Silver dissolved in 2 drs. water into the empty bladder at intervals of a week or 10 days, and Simms recommended dilatation of the organ by forcible injections of warm water up to the extent of 20 oz.

Gerbsman's method of treatment consisted in placing the patient in the knee-chest position and applying massage to the vesical neck through the rectum for two or three minutes at a time.

The most obstinate and long-continued cases are to be met with in female patients when the incontinence may become complete both in night and day time. Gersuny's operation may then be tried ; he dissects the urethra from its surroundings for $\frac{2}{3}$ inch seizes its outer freed border with forceps, and puts on a twist of half a circle, fixing it in this position with sutures ; immediate continence results. Frisch, in a case which relapsed, dissected the urethra again, and made a further twist of half a circle, and he holds that this is the best of all operations for incontinence. Before resorting to this heroic procedure the urethra may be gradually dilated by the passage of a series of large sounds till the finger can be finally introduced into the bladder ; this method, though not likely to effect a cure, can do no harm, since the incontinence is already complete : it has been followed sometimes by good results. The method of injecting sterilised vaseline into the submucous tissue in order to lessen the size of the urethral canal is useless, and may prove dangerous by causing embolism.

The after-treatment of nocturnal incontinence will consist in the administration of tonics like Strychnine, Iron, Quinine and Arsenic, with sea-bathing, open-air exercises and attention to the dietary—strong tea or coffee never being indulged in after the early evening hours.

INEBRIETY—see under Alcoholism.

INFANTILE PARALYSIS—see under Paralysis.

INFLUENZA.

Preventive treatment in the presence of a great epidemic (like that of 1890) is impracticable; all the individuals in the affected zone being apparently enveloped in an ocean of the germs, ordinary isolation measures are useless. In sporadic cases this is different, and the aged, the feeble and the diseased should be kept away from any patient suffering from even a mild attack of influenza ; full doses of Quinine and Eucalyptus are believed to afford some protection. A point in prophylaxis of vital importance and one usually overlooked is the necessity for the rigid isolation of an influenzal patient who is suffering from the pneumonic complication. Early in the last great epidemic the writer observed the highly contagious nature of the influenzal pneumonia, and witnessed many instances where a pneumonic case infected a number of convalescing patients who had escaped lung complication.

As soon as the first symptoms of influenza show themselves the patient should be immediately ordered to take to his bed ; there are few diseased conditions in which the mortality is so notably

influenced by rest and protection from exposure. The bronchial surface is left in such a receptive condition by the Pfeiffer's bacillus that any change of temperature in the surrounding atmosphere is liable to lead to serious infection from other micro-organisms, against which the healthy patient is usually immune. By compelling the victim of influenza to remain in his room for at least a week the complications of the disease are largely prevented. His strength should be maintained from the onset by judicious feeding with milk, soups and other liquid nutritious articles of diet.

The intense headache and pains in the back and limbs, even when very little fever is present, should be relieved by Antipyrine (5 grs.) administered at the beginning of the attack, and half this quantity given every 3 hours generally affords very speedy relief. The action of the drug upon the skin hastens the elimination of the poison and cuts short the course of the affection. It appears also to neutralise in some mysterious manner the toxin of the disease, and it should be combined with 2-gr. doses of Citrate of Caffeine.

Quinine is stated by Yeo to be the best of all drugs in influenza ; he believes it to be really an antitoxin, and he recommends from 1 to 3 grs. dissolved with 20 grs. citric acid to be taken every 3 or 4 hours in an alkaline mixture of Carbonate of Ammonia and Bicarbonate of Potassium. This treatment, he states, prevents complications and sequelæ, but the writer believes the action of Antipyrine to be more reliable in every respect, and it is surprising how small a dose is necessary to procure complete relief from all the symptoms. Rarely will an initial dose of 10 grs. be necessary even when the headache, muscular pains and fever are severe.

The complications are liable to take on an asthenic type, and they often demand stimulating treatment, hence the usual depressant expectorants as antimony and ipecac. should be avoided. The feeling of prostration which often follows upon the departure of the fever, headache and muscular or joint pains is best met by withdrawal of the antipyrine and the administration of full doses of Quinine in a teaspoonful of Sal Volatile and a small quantity of whiskey, brandy or port wine. Rectal feeding may be necessary to supplement the generous strengthening diet. The following is a safe and efficient stimulant in such cases :

℞. *Tincturæ Cinchonæ* ʒiiss.
Ammoniæ Carbonatis ʒiv.
Spiritus Ammoniæ Aromat. ʒiv.
Decocti Cinchonæ ad ʒxij. *Misce.*

Fiat mistura. Cujus capiat ʒj. cum ʒss. succi limonis dum effervescentia quartis horis p.p.a.

Vomiting should be relieved by sinapisms to the stomach region and small quantities of iced champagne. Hydrocyanic Acid should not be given for this purpose, owing to the cardiac weakness generally present. Rectal feeding is essential.

Rheumatic symptoms such as severe joint pains, if not relieved by the early doses of Antipyrine, may be treated by 15 grs. of the Salicylate of Soda every four or six hours.

The abdominal type of the disease is characterised by a painful diarrhœa, which should not be interfered with unless it becomes excessive, when the Dilute Sulphuric Acid (30 mins.) may be given in combination with Tincture of Opium (10 mins.) after each loose motion. Should the motions still continue frequent and excessive 20 grs. Tannalbin with 10 grs. Salol may be ordered in combination with 1 gr. of Opium.

Pneumonia requires a free administration of stimulants, and the danger of cardiac asthenia must be met by large doses of Strychnine combined with Digitalis and Oxygen inhalations, and the remedies detailed under Pneumonia.

Empyema sometimes creeps on insidiously or may follow after the disappearance of the pneumonia. It should be met by prompt incision of the chest wall and evacuation of the purulent contents of the pleura.

Bronchial irritation as evidenced by persistent coughing and bronchial inflammation is not really a manifestation of influenza, being in the majority of cases the result of mixed infection, and should therefore be regarded rather as a complication than as a type of the disease. Bronchial irritation without secretion is best met by the use of anodyne inhalations as Succus Conii, Tr. Benzoin. Co., Menthol, Thymol or Eucalyptus added to boiling water or combined with a spray of steam from the ordinary bronchitis kettle. Menthol or Eucalyptus Oil dissolved in Liquid Paraffin may be used in an atomiser, and is very efficacious when the irritation is confined to the upper air passages and nasal sinuses. The writer's routine in this complication is to anoint the chest and throat freely with Eucalyptus Oil twice a day, or to sprinkle it upon a layer of dry cotton-wool inside the nightdress, so that the vapour given off from the skin and inner clothing may be continuously inhaled in a diluted state. When the incessant coughing embarrasses the heart, internal sedatives to the respiratory centre are indicated; the best of these is Heroin Hydrochloride in doses of $\frac{1}{16}$ gr. As the dry state of the bronchial and laryngeal mucosa tends to keep up the irritation in these cases, much good can sometimes be accomplished by combining with the latter drug or with Morphine moderate doses of Sodium Iodide.

Bronchitis will be also relieved by the above remedies, but when the secretion is profuse morphine and even heroin must be used with great caution, reliance being chiefly placed in Ammonia combined with Iodide and diaphoretics like Mindererus Spirit in full doses. 5 grs. Iodide of Sodium added to the effervescing

mixture mentioned on a previous page is a reliable stimulant and expectorant. Counter-irritation is always beneficial, but this should be smart; the continuous application of large linseed poultices to the chest had better be avoided. Any signs of cyanosis should be met by Oxygen inhalation, and feebleness in the act of expectoration may be checked by a hypodermic dose of Strychnine.

The most serious complication of influenza is the cardiac weakness induced by the action of the toxin on the heart muscle; it more frequently appears as a sequela. Rest, prolonged and absolute, is imperatively demanded in addition to generous diet and moderate stimulation. Whether previous valvular disease or other organic heart affection has existed the treatment in the main is to be that of failing compensation or dilatation, as detailed in the article on Heart Disease. The only reliance on drugs must be placed upon Strychnine administered hypodermically in conjunction with moderate doses of Digitalis or Strophanthus.

Of the nerve complications occurring during the attack, the most serious are the presence of delirium and coma, which have given the name of the *nervous* type of influenza to the condition. Such symptoms are to be carefully differentiated from those of abscess of the brain, sinus involvement or meningitis which arise from extension of the middle-ear disease liable to occur at a later stage. The best treatment to pursue for the relief of delirium is to apply the ice-cap to the head, administer a brisk saline purgative, and continue the Antipyrine internally without caffeine.

Coma if associated with high temperature will require the wet pack or assiduous sponging and a 10-gr. dose of the Acid Hydrochloride of Quinine administered hypodermically in conjunction with blistering of the scalp or nucha.

Mental symptoms may develop suddenly during convalescence, and suicidal tendencies must be carefully watched.

Neuralgia, peripheral or solitary neuritis, and various spinal symptoms simulating system-lesions of the cord and loss of the senses of taste and smell appearing after convalescence, should be treated upon general principles. The best routine agent in these cases is the administration of small doses of Antipyrine in combination with Salicylates to promote elimination and to counteract the influence of the toxins lingering in the blood and tissues. The anosmia yields in time to Strychnine hypodermically, and long-continued profuse sweating should be dealt with by the same drug.

Insomnia is often a troublesome sequela, which should be treated not by opiates, but by Trional, Sulphonal, Paraldehyde or Veronal.

INGROWING TOE-NAIL.

The cause of this condition should be avoided; it consists in the habit of paring the nail squarely so as to leave a sharp angle, which is forced into the skin by the pressure of a tight boot with a narrow, tapering or schooner-shaped toe.

In trivial cases the clipping of the free margin of the nail in circular fashion, and scraping of the dorsal surface with the edge of a bit of glass or with the knife so as to reduce its thickness and to produce a tendency to curling upwards or backwards of its lateral margins, and the removal of any cuticle accumulated under the ingrowing edges of the nail, are all that are required to give relief and prevent further progress of the condition.

If ulceration has already occurred a minute roll of gauze or of tin foil should be neatly packed down between the tender overhanging skin and ingrowing edge so as to insinuate itself under this edge and cause elevation of it. Strapping should be then applied, so as to retain the roll in its position and at the same time to drag upon the overhanging integument and keep it pulled away from contact with the ingrowing edge. In a short time the roll of tin foil can be easily packed well under the inturned edge, so as to secure its thorough elevation; it should not be removed for several days, after which the space may be filled with Boracic Acid, Nitrate of Lead, Alum, Oxide of Zinc, or with the following—

R. *Pulv. Iodoformi* ʒiv.
 Calaminæ Præparat. ʒij. *Misce.*

Nitrate of Silver, Sulphate of Copper, strong Solution of Perchloride of Iron, pure Carbolic Acid, and Acid Nitrate of Mercury are useful for the destruction of exuberant granulations, and occasionally they destroy the sharp inner edge of the nail which is beyond the reach of the knife and scissors, but mere paring of this margin of the nail is useless. Pürchauer softens the nail by several applications of a 40 per cent. solution of Caustic Potash, scraping its surface after each application till the nail becomes a mere film in thickness, after which it may be lifted up with forceps and cut as easily as paper.

When the ulceration does not disappear, under cocaine or ether spray the overhanging granulations and integument may be shaved clean off by means of a sharp scalpel and the wound left to heal under antiseptic dressings. If Cotting's modification of this method be pursued excellent results are obtainable; he extends the incision backwards so as to remove all granulating tissue together with a slice from the side of the toe, taking care, however, not to interfere with the inner margin of the nail. This method, if skilfully performed, often gives better and more lasting results than those following the operation of evulsion.

A more radical operation is to carry the incision through the nail, removing a considerable longitudinal strip of it, and then to excise completely the matrix belonging to the portion of nail removed.

Where the ulceration process has loosened the entire nail *evulsion is necessary*. This is accomplished, when the patient

is fully under the influence of an anæsthetic or under local anæsthesia, by inserting one blade of a pair of dressing forceps under the centre of the nail to its root and securing a firm grip as the blades are closed, and by firm traction the nail is removed.

One-half of the nail may be removed, after previously cutting it in two, by inserting one blade of a pair of fine and sharp-pointed scissors under its centre and pushing it down to the root. The loosened portion may then be easily removed by the forceps. Powdered Boracic Acid being freely applied, the wound may be enveloped in lint moistened with Spirit Lotion and surrounded with oiled silk. Should trouble arise after the growth of the new nail the entire matrix must be dissected out after a second evulsion has been performed.

INSANITY.

The increase in the prevalence of insanity during late years has directed much attention to *preventive* measures. Obviously the most important of these should consist in the prevention of the marriage of all individuals possessing a marked family history of any degenerative psychosis, since in a large proportion of cases the malady is hereditary. Marriage need not, however, be forbidden when the family history clearly indicates that the insanity of the parent was obviously of the acquired type, though here there is often room for the suspicion of an underlying deep neurotic taint which assisted the onset of mental aberration. The marriage of individuals whose family history on both sides demonstrates a strain of insanity should be regarded as little short of criminal unless the female be beyond the child-bearing period.

In the upbringing of the offspring of parents of the ordinary neurotic type much may be done by moral and educative treatment, and as stated in the article on Hysteria the children of a mother suffering from the graver degrees of that neurosis should, when possible, be removed from her influence and sent to a boarding-school at a distance. The unstable psychic or neuropathic inherited condition being liable under severe strain to cross the boundary-line between an ordinary neurosis and a confirmed psychosis, every form of severe mental application and all profound emotional strain and sexual excitement should be guarded against as far as possible. The part played by syphilis and alcoholism in the production of insanity must always be borne in mind. Though the pernicious habit of self-abuse is often the result of mental deterioration, it may certainly become the cause of it in youths with a well-marked neuropathic taint. Therefore in such, a close investigation should be pursued regarding the habit, and moral treatment should follow.

The treatment of the different types of insanity is beyond the scope of the present work. Dementia, mania, melancholia, paranoia, idiocy, moral mania, monomania and their varieties

would require for a description of the necessary details of treatment space far beyond that at our disposal. Moreover, these details can only be carried out in institutions specially designed for the purpose, and furnished with elaborate machinery for isolating, watching, nursing, dieting, exercising, amusing and instructing the victims of mental disorders.

Early removal to a suitable institution is of the utmost importance, and as a rule it may be said that in acute cases every day's delay diminishes to some extent the chance of permanent restoration. To undertake the care and management of insanity in the patient's home would be in the majority of cases a serious mistake and a cruel wrong to the patient, whose chances of recovery would be seriously diminished by such a proceeding. Where the patient's ailment is such as does not prevent his travelling and mixing with the public, his early removal from home under the watchful care and close surveillance of a physician during a prolonged tour by rail or sea may be fairly tried with some hope of success before resorting to the restraints of an asylum. Such cases are, however, upon the whole rare where this method of treatment is available or warrantable. Only in a well-equipped asylum can rest, isolation, feeding, moral treatment—psycho-therapeutic or suggestive—be properly carried out, and the objections of the friends of many patients have been met by the introduction of the villa system into most of the modern planned institutions.

Feeding is an all-important element in most cases, and often it must be carried out by the stomach-pump or nasal tube and siphon. Adam advocates the open-air treatment as in the Nordrach system, with very generous feeding. Beyer recommends the use of a bath at 95° F. for hours at a time, the patient spending his day in the bath, where he takes his meals, and is moved from the bath to bed at night. The drug treatment of the various forms of insanity resolves itself into the judicious administration of remedies, with the view to correct the many deviations from the normal physiological state which may exist either as the cause or as the result of the abnormal state of the mind. Thus tonics for loss of appetite, and cod-liver oil, iron, and other restoratives are indicated when emaciation or anæmia exists.

Sleep should, speaking generally, be insured. Narcotics should be avoided, except when pure hypnotics fail. The favourite drug is Chloral; but the writer, knowing its dangers when administered to sane patients, and having very little experience of it in insanity, hesitates to say anything in favour of it. Hyoscine has given excellent results in several large asylums, and the hypodermic injection of $\frac{1}{100}$ gr. of pure Hyoscine Hydrobromide generally produces the most desirable calm and sleep. Veronal, Sulphonal, Trional, Paraldehyde, Chloralamide, and other hypnotics may be used according to their recognised indications.

Opium and its alkaloids are generally objectionable. (See following article.) Bromides are valuable in acute maniacal states, but their administration in all melancholic forms of insanity should be avoided. A favourite hypnotic combination in many asylums is a mixture of Sodium Bromide and Chloral Hydrate.

INSOMNIA.

The classification of the different types of insomnia is most difficult and unsatisfactory. Secondary or symptomatic and primary insomnia are accepted as embracing all cases of sleeplessness. The primary division includes the insomnia due to *psychic* causes such as mental excitement, grief, worry, brain fag and that to be met with in the neurotic and psychopathic strains which manifest neurasthenia, hysteria, hypochondriac tendencies, or other latent affinities with melancholia and the different types of insanity. This primary class will also include the large group of *toxic* insomnias. This group, however, overlaps those included in the secondary or symptomatic division of sleeplessness in which the insomnia is the result of some primary diseased condition as fever, pulmonary, cardiac or renal disease where the exciting cause of the wakefulness is often traceable to the action of some toxin. Hence in the treatment of insomnia little aid is to be expected from a rigid classification of its different types, the wisest course in each case being to institute a careful search for the primary cause upon the removal of which the success of all rational treatment depends. It must also be remembered that in a neurotic individual a trifling symptomatic or secondary cause may induce severe insomnia, whilst the same factor is harmless when present in an individual possessing a more stable nervous system.

Thus severe insomnia may be produced in some neurotic individuals by a cup of tea taken late in the evening, by the presence of some trivial personal discomfort as coldness of the feet, or by any sudden change in the hours of diet; some patients cannot sleep after a late supper, whilst others fail to get any sleep if they retire to rest with their stomachs empty. Sleep may only come to those who retire to bed immediately after wearying the brain with active exercise. Others may be wholly unable to sleep if any previous mental activity has been indulged in. It is a very common experience to find amongst active brain workers that sleeplessness follows after taking a day of rest and calm, and often the freedom from care and the repose of the Sabbath result in the loss of sleep for the night, whilst upon the other hand insomnia often seizes the clergyman after his severe day of exciting mental strain.

A very common variety of sleeplessness described by the writer under the name of *habit* insomnia is met with in which no immediate cause is discoverable, the affection being originally produced

by an exciting cause long since removed, and the patient has acquired the habit of lying awake. The mere dread of not sleeping is a powerful factor in such cases when the idea presents itself to the mind of the patient after retiring to rest. The rhythmic nature of the natural sleep process must always be kept in mind ; when this rhythm is broken by any serious change in the hour of taking rest a troublesome habit insomnia may develop ; the individual lies awake till the usual sleeping hour arrives, and the conditions being then so different from those proceeding from his former habit that sleep does not supervene.

In the different articles in the present volume the sleeplessness associated with each disease is referred to amongst the complications of the affection. The aim of all treatment should be the removal of the primary cause as dyspepsia, gouty conditions, cough, pyrexia, pain, pruritus, dyspnœa, failing compensation, obstinate constipation, &c. This should be undertaken in every instance before resorting to the routine administration of hypnotics, though the use of these in some cases is imperative when the cause is not capable of being removed, and in many cases even after the causal factor has been dealt with, should habit insomnia have developed. A word of caution is, however, necessary in dealing with narcotics ; when pain is the immediate cause of insomnia ordinary hypnotics are useless as sleep will not supervene till the pain has been relieved by morphia or opium. Rigid prohibition of these drugs is necessary when the cause of the pain cannot be removed, as the opium habit is certain to become established if the drug is employed as an hypnotic, and the same remark applies to a certain extent to alcohol.

The cause of primary insomnia being discovered and remedied by strict obedience to the violated health law, the condition may be expected to gradually pass away without drugging, unless a confirmed habit of sleeplessness has become established. There are minor aids which in such cases should not be despised before resorting to hypnotics.

Thus change of scene, a sea voyage, free open-air exercises near the sea, indulged in till a decided degree of fatigue is felt, the avoidance of all mental overwork, and, as far as possible, of anxiety and worry, should be advised. A long, smart walk just before bed-time is an excellent hypnotic, if the patient upon finishing it retires immediately to his room, undresses without sitting down, and goes to bed.

Cold feet must be warmed and rubbed till tingling is produced. Robust patients can dip their feet for a few seconds into cold water, and restore the local circulation by having them rubbed briskly with a coarse towel. Feeble folk must generally fall back upon night socks and the objectionable hot-water jar or India-rubber bottle. Cold water bandages to the forehead or scalp seldom do much good, and may keep the patient awake by causing discomfort locally. A hard bed is better than feathers, and a hop

pillow may have a good moral effect. Where the patient tolerates it, elevation of the head is a decided advantage, especially where there is want of vascular tone. There are some who fancy that they can sleep better when their bed is placed due north and south.

All sorts of devices are recommended for wearying the brain, such as counting up numbers, repeating poetry, &c. The influences of monotonous noises or vibrations to which the patient has been long familiar, as the hum of city traffic, the sound of machinery, of running water, &c., are often productive of good. The writer knew of an instance of protracted and dangerous insomnia in the wife of a blacksmith, which, after failure of all hypnotics and absolute stillness, yielded to the music caused by the loud hammering on an anvil in the forge beneath her bedroom. He has witnessed an hospital patient who could not sleep till she got a small and rather noisy clock from her home and placed it by her bedside. It is as common an experience for sleep to become less sound in individuals who have slept for years in the centre of a noisy city after they move into peaceful suburban districts as is the opposite change.

A copious warm drink or a cold-water draught before lying down occasionally soothes some patients. The habit of reading oneself to sleep by the aid of some uninteresting author, though not to be recommended, is often efficacious. The absence of light is generally essential, and the morning sun should be shut out by double blinds.

Massage is a powerful hypnotic, and sometimes very wakeful and neurasthenic patients fall asleep during the performance of it. Sometimes, however, massage may excite. Eccles advises thorough rapid massage of the abdomen, thighs and legs, so that a temporary anæmia of the brain may be produced by the blood flowing into the dilated vessels of the manipulated regions. A warm or hot compress to the abdomen tends to prolong the dilatation of the abdominal bloodvessels, and sound, refreshing sleep often supervenes.

Hydropathy is a valuable aid in treating insomnia, and in some cases gives permanent relief. A warm bath should be taken till the patient is almost beginning to feel weak. He may then be enveloped in a flannel bath-sheet, and when lying on his bed upon the top of the bedclothes his body should be perseveringly rubbed down by an attendant with a linen Turkish towel till a grateful sense of drowsy languor is felt, after which he should get under the bedclothes. The Wet Pack may be employed for 45 minutes with advantage, but it will be better to use a sheet wrung out of tepid or warm instead of cold water, as generally recommended. Friction with a rough warm towel should be afterwards employed, and the amount of over-clothing should not be such as to encourage profuse perspiration which may keep the patient awake. The local pack to the trunk may likewise be employed

with advantage, and after getting to bed its good effects may be kept up by giving warm or hot drinks. Gellhorn uses a piece of calico, 18 inches wide and nearly 3 yards long, rolled up like a bandage, and a third of it wrung out of cold water. With this he bandages the leg, the wet portion being carefully covered up by several layers of the dry part as well as by a layer of gutta-percha tissue, and a stocking drawn over the whole; the dilatation of the vessels which follows diminishes the amount of cerebral blood and induces sleep, especially where there is any cerebral congestion. The Cold Douche has been recommended, and is valuable in allaying the cardiac excitement upon which the insomnia may depend.

Electricity may be used in many ways. The writer employs a weak constant current of 5 cells of a Leclanché battery, with one electrode on the forehead and the other on the occiput for 5, 10 or 15 minutes. The interrupted current to the spine, alone or in conjunction with massage, has been used in some cases with satisfaction, and Faradisation of the head has often proved useful.

Static electricity gives best results. After insulation of the patient upon a glass stool, his body is brought into connection with the conductor of a Carré or Holtz machine, and when thoroughly electrified a fine metal point is held opposite several spots on the scalp and forehead not near enough to produce a spark. The sensation is as if a light wind or breeze was pleasantly playing over the region, and McClure has found sleep come on whilst this form of electric souffle was being employed. The production of heavy sparks is not necessary or advisable, but the use of the metal cap and static insulation gives the best results which can be obtained from electricity. The high-frequency current is less satisfactory.

Where the above-mentioned remedies fail, the physician then feels himself driven to employ drugs of the narcotic or pure hypnotic class. There is little danger of the formation of a drug habit if the sleep producer be only employed for short periods in order to break the habit of lying awake, especially in cases where the insomnia has been of recent development.

Alcohol is of great value when used with caution and discretion in temporary insomnia. The various spirituous beverages have very different therapeutic actions, which cannot be explained by their alcoholic strengths. Thus for insomnia wines are inferior to whiskey, and brandy does not produce as good results as whiskey. Strong ale is highly hypnotic, and so is porter or stout. To obtain the best hypnotic effect from alcohol, it should be given in one full dose just as the patient has undressed and lain down in bed. It acts more certainly if given warm, but not hot. One wineglassful of good whiskey, made into punch, and swallowed as a draught—not sipped in spoonfuls—is a most invaluable soporific. Where the physician has reason to dread the formation of the alcohol habit it may be mixed with a bitter,

or may be forbidden altogether after a short time. The danger of intemperance is much greater when alcohol is ordered to be taken with meals; but this danger, when the drug is used in simple insomnia, should never be lost sight of. It is, moreover, surprising to notice, when the patient abstains from the use of alcohol at all other times, how the same dose may continue to produce its beneficial hypnotic effects without requiring augmentation for long periods. Headache and malaise seldom follow, and when they do they may be prevented by using a purer whiskey of greater age. The product of the patent or silent still should be condemned; the writer has satisfied himself that it is more liable to lead to the alcohol habit than a mature pot-still whiskey, especially if swallowed in concentrated form.

Opium or Morphia is the most certain in its action of all sleep producers. It possesses the power of relieving pain by preventing the conduction or perception of painful impressions, and sometimes this can be done by employing small doses which would have no soporific effect in ordinary states. As sleeplessness is so very often caused by pain in the innumerable instances of diseased action coming constantly under the notice of the physician, it must be used often to induce sleep as in neuralgia, sciatica, pleurisy, cancer, angina, &c. In simple chronic insomnia, whether produced by mental overwork or occurring in the insane, and when not caused by or complicated with pain, opium or its alkaloids should not as a rule be employed.

As the present article deals chiefly with simple or primary insomnia, little space need be given to the discussion of narcotics. The danger of inducing the opium or morphia habit is so great in chronic insomnia that the indications for these remedies should be strong indeed to tempt the physician to prescribe them. Where the insomnia is of very short duration, and caused by mental worry or overwork, which is not at all likely to be repeated or become a habit—in short, where the cause is fleeting, or has already fled, opium is an invaluable hypnotic, and may be employed in such a case with great advantage. The dose should be a full one, $1\frac{1}{2}$ or 2 grs. of opium, or 35 mins. of the solution of morphine. The dose should be given as the patient lies down, and darkness and quiet should be maintained. If sleep does not result in two, three, or four hours, the same quantity may be again administered.

It is a good rule when morphia is administered hypodermically as an hypnotic for the first time that a dose of alcohol should be given a few minutes before it, or 1 min. of Solution of Atropine should be injected along with it. When severe pain is present larger doses of opium or morphine are required, and it is as a rule better in such cases to repeat the dose at a shorter interval than to give one very large dose. In chronic bronchitis with profuse secretion, in the late stage of phthisis, in congested states of the brain with contracted pupils, in renal affections and in all

ailments of childhood or infancy, opium is contra-indicated. In the insomnia of delirium tremens it may be given in large doses. In the painful insomnia of cardiac distress hypodermic injections of morphia ($\frac{1}{4}$ gr.) often give great relief and sound sleep when every other hypnotic has failed, but Paraldehyde should always be tried first.

In acute melancholia or mania, morphia is still sometimes employed, but Hyoscine and the newer hypnotics are generally far better. Codeine, Narceine, and Bimeconate of Morphia, and the various preparations of opium, as Black Drop, Battley's Sedative, Nepenthe, &c., may be tried where the after ill-consequences of opium have been barriers to its use. Codeine is a very feeble hypnotic. Opium or morphia may be combined with most of the new hypnotics, and the writer has often relieved pain with small doses of morphia, and afterwards induced sleep by 20 grs. of Sulphonal. The dose, even when the minor action of morphia only is required, will generally need augmentation, and this is one of the chief objections to the use of opiates in insomnia and all chronic conditions associated with sleeplessness. The Meconates of Narceine are recommended by Laborde as less likely to produce malaise and headache. Dionin or ethyl-morphine-hydrochloride is also useful, especially in the insomnia of the morphia habit. It may be given in $\frac{1}{4}$ -gr. doses. Heroin Hydrochloride or diacetyl-morphine hydrochloride has similar action, and is preferable to all other opium derivatives when the cause of the insomnia is due to bronchial irritation. Attention has recently been directed to the hypnotic effect of small doses ($\frac{1}{32}$ gr.) of Apomorphine when given hypodermically. C. J. Douglas maintains that when so given it is the most reliable of all hypnotics, and Rosebrugh extols its efficacy in delirium tremens, but the amount should never approach the emetic dose. It may be combined with Strychnine in this latter disease.

Indian Hemp is open to all the objections to which opium is liable, and hence it is not a suitable drug in the treatment of simple chronic insomnia, and moreover it is most uneven, and very often fails entirely to induce sleep. It does not, however, exert such deleterious influence over digestion, nor does headache so frequently accompany its administration even in large doses. Cannabin Tannate is an excellent form for prescribing the drug in doses of 5 to 10 grs. in the insomnia of mania. Cannabinon is also recommended in similar conditions, but the dose should not exceed 1 gr.

Antipyrine and other analgesics by relieving pain may assist in the induction of sleep, and should always have a trial before resorting to narcotics.

Hyoscine Hydrobromide in doses of $\frac{1}{200}$ to $\frac{1}{100}$ gr. administered hypodermically is a powerful soporific, producing deep, quiet sleep in 20 minutes, which lasts 6 or 8 hours and leaves no ill-consequences after awaking. In acute mania and other con-

ditions of grave excitement with motor disturbance it is a most rapid and certain hypnotic. Krauss states that after its administration the maniac collapses as if struck by lightning, but the calming down of the general paralytic is gradual, his restlessness soon settling into peaceful slumber. It is obvious that a remedy of such potency is not one to be employed in a routine way in the treatment of simple chronic insomnia. Some authorities have reported sharp depressant effects and wild delirium from $\frac{1}{80}$ gr., and it will be wise to regard valvular disease as a contra-indication to its use. In insomnia associated with or depending upon a latent strain of insanity it is the most efficacious of all hypnotics. The drug may be given by the mouth, but is less certain in its action than when injected.

Bromides are the least harmful of all hypnotics, and should invariably have the first trial in every case of mild insomnia, whether of primary or secondary nature.

In insomnia following prolonged mental activity and overwork full doses (30 to 60 grs.) of the sodium salt produce calm, deep, refreshing sleep. In severe cases it very often fails, but failure does not leave the patient in a worse condition than if he had not taken the drug. The cases where its best effects are uniformly observed are those where sleeplessness is caused by mental over-activity, a state not of simple wakefulness, but where the brain is unusually active, and the mind excited by a rapid succession of brilliant ideas. This condition often supervenes upon the patient retiring to rest immediately after some mental effort or worry, without permitting a period of rest, during which the mental faculties should have been diverted into other channels. In this state there is some flushing of the face, and throbbing of the carotids and pulsations are felt in the cranium; it is a very frequent experience in public speakers and debaters. If 30 grs. of bromide produce no effect in an hour under these circumstances, the dose may be repeated, and if sleep does not soon follow, a full dose of warm whiskey punch will rapidly produce sound slumber. There is a state of restlessness of a different sort often observable in highly nervous patients after getting into bed, in which the slightest external stimuli call forth incessant and ineffectual attempts to dispose the limbs, head or trunk in such positions as will give a sensation of comfort and tranquility. This, which might be called "acute fidgets," is controlled effectually by a few doses of the bromide, which probably acts by diminishing reflex excitability.

Insomnia shows itself often in another form, the patient falling asleep almost immediately on retiring and waking up thoroughly soon afterwards, and lies tossing about till morning. These types of sleeplessness must be always kept in mind whilst selecting the most suitable drug for administration, but bromides are suitable in both varieties. A fair dose if given before bedtime will prevent the waking up, or a fuller dose may be given

after the patient has got his brief preliminary sleep. The first-mentioned plan is, however, a better course to pursue, since it tends to break the habit of awakening. Bromural and the other bromine compounds and combinations will be mentioned later on.

The bromides may be taken for long periods without hurt. In one patient with a bad family history of insanity who suffered from insomnia, the Bromide of Potassium combined with a small dose of Tincture of Hyoscyamus (20 mins.) was steadily taken almost every night for 25 years with most satisfactory results, and with no necessity for augmentation of the dose, and with no ill consequences. In acute mania McLeod induces "bromide sleep" by administering 2 drs. of Sodium Bromide in 5 oz. water every two hours during the day until 1 oz. is taken, and this quantity is repeated during the second day.

Chloral Hydrate has been extensively employed as an hypnotic in simple insomnia and delirium tremens. It is perhaps the most efficacious soporific which we possess when pain is not present. It is open, however, to two objections which seriously militate against its usefulness. These are the dangers of establishing a chloral habit, and the depressing influence which the drug exerts upon the heart. It directly affects the cardiac muscle, dilates the arterioles, and may injuriously affect respiration. Generally sleep is profound and refreshing, and the after ill-consequences are trivial. It acts rapidly, and the slumber may be prolonged to ten or twelve hours. Its depressant action should distinctly forbid its use in cardiac disease, in emphysema, and bronchitis, and in the late stages of typhus and typhoid insomnia, and in the sleeplessness following influenza, when the cardiac muscle is always weakened; it is likewise a dangerous hypnotic in ordinary senile insomnia for the same reason.

In the sleeplessness of mania and of the various varieties of insanity its soporific virtues are so uniformly experienced that it is employed in a routine fashion in many asylums. Though patients have taken it without any ill-effects in these diseased conditions for many months, there is always a remote possibility of a lethal action upon the heart. This is especially liable to ensue when the dose has been increased, and the fact of its having been previously taken with great advantage is no safeguard against its depressant cardiac action upon some future occasion.

Whilst the victim of the opium habit may increase enormously with safety to life the dose of his narcotic, gauging its amount by the effects which he can measure by his own sensations, when he attempts a similar practice with chloral he may have no warning till fatal paralysis of the cardiac muscle ensues. This is the explanation of the many deaths "by misadventure" in medical men who have become victims of the chloral habit.

It is useless to combine it with digitalis with the view of lessening its evil action upon the heart, as is often advised. The

digitalis has no cardiac tonic action for some hours after being swallowed, whilst the chloral may act injuriously within a short time.

Chloral acts rapidly, and should be given immediately before retiring to rest, and as some patients are very susceptible to its influence it is wise never to begin with a larger dose than 20 grs.

It has been combined with Morphia or bromides with advantage, and the writer believes that 1 or 2 oz. of whiskey given at the same time greatly increase its efficacy, and materially diminish its power of depressing the heart. Some authorities strongly condemn the combination of chloral and morphia as the most dangerous of hypnotics. The writer cannot confirm this judgment. The value of the bromides when given with chloral is above dispute, as a smaller dose suffices.

The following combination is very efficacious :

℞. *Chloral Hydratis* gr. xxx.
 Potassii Bromidi gr. xxxx.
 Liq. Morphinæ Bimecon. min. xxx.
 Syrupi Aurantii Flor. ℥iv.
 Aquæ Destillatæ ad ℥iij. *Misce.*

Fiat haustus. Sumat dimidium hora somni et residuum horas tres postea, si opus sit.

Bromidia and Liqueur Bromo-Chloral Co. contain hyoscyamus and Indian hemp in combination with chloral and bromides ; they may be given in teaspoonful doses.

Butyl-Chloral Hydrate possesses many of the good qualities of chloral, and is less dangerous. It is, however, a decidedly weaker hypnotic unless where sleeplessness is caused by some painful condition of the fifth nerve. It is in these latter instances that it is generally employed, and as a pure hypnotic it has not met with a success warranting its administration, except where the more trustworthy agents have failed. Chloretone—a derivative—is given in 20-gr. doses in cachets, but has feeble hypnotic powers.

Somnal is the name given to ethylated chloral urethane, which in 30-min. doses acts like chloral, and is said to be free from its serious drawbacks. Somnos is an allied liquid compound given in doses up to 4 drs. and Chloral Urethane or Ural, also derived from chloral, is vaunted as a safer drug in 30 to 40 gr. doses, but it appears to be more dangerous than chloral hydrate.

Chloralamid is an hypnotic prepared by combining chloral with formamide. It is in the form of small, colourless, odourless, slightly bitter crystals, soluble in water. 30 to 50 grs. is the dose most frequently employed, and it may be administered by the rectum without causing irritation. Sleep comes on in less than one hour. It seems somewhat less powerfully hypnotic.

than chloral, but there is no dilatation of the arterioles or fall of blood-pressure. It is indicated in the same class of cases as chloral in simple insomnia. It has already been used as a hypnotic in heart diseases and bronchial affections; its hypnotic power is roughly calculated at $\frac{2}{3}$ of chloral hydrate. It is claimed for this drug that for very long periods the dose need not be increased, and that it tends to establish a *habit* of sleeping after its administration has been suspended. It is also claimed for it that it is one of the safest hypnotics, but it must be acknowledged that it is less certain than chloral. The same may be said of Chloralimid: both drugs as well as chloral hydrate possess feeble pain-relieving powers.

Chloralose, formed by acting on chloral with glucose, has given excellent results in doses of 4 to 10 grs., and it is claimed for it that it causes no digestive derangement, and that it is less dangerous than chloral, but it is decidedly less reliable as an hypnotic.

Hypnal or monochloral-antipyrine is vaunted, but it is heir to all the objections raised against chloral in the ordinary hypnotic dose of 20 grs.; it is perhaps the most depressant of the chloral compounds.

Isopral or trichlor-isopropyl-alcohol is another chloral product which recently has had very extensive trials, and the reports show that it is less dangerous than chloral hydrate in the dose of 15 grs. It is very suitable for administration in the enema form, when there is gastric irritability, and Wassermeyer states it may be safely given when an organic heart lesion is present.

Sulphonal may be given in doses of 30 grs.; it is the type of a pure hypnotic, possessing no analgesic properties. In insomnia uncomplicated with pain it acts with tolerable certainty, and it is free from any depressant action on the heart, and does not tend towards the formation of a habit. Sleep does not come on immediately, sulphonal being very slow in its action; sometimes three or four hours elapse before the soporific effect begins to manifest itself. It has a prolonged deferred action, which sometimes causes a drowsiness, which may last for a considerable part of the day following its administration. This is more liable to happen when it has failed to induce sound refreshing sleep after the usual interval. It has been very often noticed that this drowsiness extends into the following night, and some patients who use the drug constantly find that it produces better effects upon the second night without taking any more of the drug in the meantime. It is especially suitable in the insomnia of individuals which shows itself by a waking up after a brief period of sleep on first retiring to rest. Ataxia or muscular incoordination, vertigo, giddiness and confusion of thought have sometimes been noticed after its prolonged administration, and hæmatoporphyrinuria and albuminuria have occasionally resulted. It is a good hypnotic for children, and is tasteless and inodorous. 30 grs. partially dissolved in a little warm beef tea or hot water

may be given about an hour before retiring to rest. When some alcohol is combined with it the dose should be given as the patient retires to bed, and its effects are very rapid when it is dissolved in hot punch.

Trional is an allied compound which has largely taken the place of sulphonal as a pure and unobjectionable hypnotic, being less cumulative and more rapid in its action and not so likely to cause prolonged drowsiness, headache or other nervous symptoms. It may be given in doses of 20 to 30 grs. just before retiring to rest, and it is very suitable for children. Upon the whole it maintains its position as the safest of all the newer hypnotics, though occasionally neuritis has been observed after its prolonged use, and very occasionally hæmatoporphyrinuria has been noticed. Tetronal, another allied sulphonal compound, acts like trional, but it is cumulative and less reliable than either sulphonal or trional when given in its usual dose of 15 to 20 grs.

Veronal—a carbamide or urea compound known by a variety of other names—has lately come into use. It should never be given in larger doses than 10 grs. ; $7\frac{1}{2}$ grs. in any hot liquid at bedtime should seldom be exceeded. It is decidedly in the writer's opinion a less safe and reliable hypnotic than trional, though much vaunted. The same remark applies to its homologue Proponal, to Veronal Sodium (Medinal), and to Bromural, all of which are administered in 5 to 10 doses.

Urethane or ethyl carbamate and its allied compound—Hedonal—are milder substances, given in 30-gr. doses, but they often fail in safe doses to induce sound sleep.

Hypnone or acetophenone is a dangerous and unreliable drug which must, if used at all, be given with caution in doses not exceeding 5 mins.; this amount may excite severe gastric irritation.

Paraldehyde, if it were not for its vile taste and smell and the tell-tale odour of the breath, which lasts for 24 hours, must be pronounced to be the most valuable of all simple hypnotics, as it is undoubtedly the safest and has the largest range of usefulness. It is the drug which the physician should always employ in the insomnia of patients whose hearts are in any way damaged, whilst in mania, melancholia and other mental states it is as rapid in its action as chloral, and without any of the drawbacks which follow the use of that drug. The sleep rapidly induced by paraldehyde is sound and refreshing, and seldom followed by headache, malaise or gastric disturbance. The ordinary dose is 1 dr., but treble this amount can be given with safety; it may be administered in a little whiskey, and given in this way it is by far the best routine hypnotic in delirium tremens. In very intractable cases of insomnia it may be given upon the second night after sulphonal administration, when a small dose will greatly intensify the prolonged deferred action of that drug. The only contra-indication of its use is pain, as it possesses no anal-

gesic action. It very rarely leads to the establishment of any habit.

It may be prescribed in the following draught, which is very suitable in those cases of insomnia where the patient is liable to fall soundly asleep on lying down, but may awaken in an hour or two and remain awake during the rest of the night. The draught may be reserved for such emergencies.

R. *Paraldehydi* ʒiss.
 Tr. Aurantii ʒiij.
 Aquæ Cinnamomi ʒj. *Misce.*

Fiat haustus hora somni sumendus p.p.a.

Menthylal is a strongly smelling liquid, causing sleep in doses of about 1 dr. It is an expensive and a weak hypnotic, and very often fails.

Amylene-Chloral or Dormiol, an oily liquid given in doses of 20 to 45 mins. in capsules, has been much praised in mania, melancholia, hypochondriasis, and functional neurosis. It combines the properties of both chloral and paraldehyde. Amylene Hydrate is tertiary amyl alcohol, which has been found to produce reliable hypnotic effects in doses of about 1 dr. It is best given in capsules or in claret or any weak wine, and it appears to act like chloral, without exerting dangerous depressant action upon the heart in ordinary doses. It acts very rapidly, but its unpleasant taste and expensiveness are barriers to its usefulness, though it has been found to give effects equal to those of paraldehyde in delirium tremens and melancholia.

Hypnotism has been resorted to sometimes with marked success when all measures have failed to induce sleep in neurotic individuals, but it is a remedy which should only be employed by those who have made a close study of its operations.

In desperate cases of insomnia Chloroform or Ether anæsthesia has been resorted to, but obviously these agents can only be very occasionally employed in emergencies.

INTERTRIGO—see under Erythema.

INTESTINAL HÆMORRHAGE—see Melæna.

INTESTINAL INFLAMMATION—see Enteritis.

INTESTINAL OBSTRUCTION.

Cases of obstruction of the bowel are usually grouped into the *acute* and *chronic* forms, but a large percentage of acute cases occur in patients who have been suffering from some chronic obstructive lesion which suddenly causes complete blocking of the intestinal canal.

In *acute* obstruction before any form of treatment can be

thought of, the physician's duty is to exhaust every means of finding out the cause of the blockage, though he is never justified in delaying treatment till he has satisfied himself about the diagnosis of the cause. To do so in the majority of cases is to abandon the patient to his fate, as the only hope, speaking generally, lies in early operation. The possible causes of the obstruction being recalled to his mind, he rapidly eliminates each till he arrives at the conclusion of the most probable and that the abdomen will require opening.

The rectum should be at once explored, and if impacted *fæces* are discovered these should be broken up by a scoop or by the fingers of the gloved hand and the colon flushed out by a large enema of tepid water. Even when the bowel is found empty one copious enema should always be administered slowly, with the patient lying upon his left side, the pelvis being raised and the head depressed. If possible 4 to 6 pints or more should be slowly injected with the hope that if any obstruction exists in the colon (*scybalæ*, *intussusception*, &c.) it may be passed by the stream of water and the whole of the large intestine distended by the fluid. If no result follows the enema should not be repeated, and the physician should abstain from passing the long tube, the persistent use of which is both irrational and mischievous. A malignant growth or a stricture in the rectum affords clear indication for a rectal operation. The hernial regions should be carefully explored both at the usual sites and at the sciatic notch and obturator foramen. The presence of a hernia at once demonstrates the nature of the attack, and demands the relief of the strangulated knuckle of bowel. If an old empty hernial sac be discovered the indications for operation are almost equally clear. The surgeon should cut down upon it and fully explore the peritoneal opening with the hope of finding and relieving any internal strangulation in the immediate neighbourhood of the internal ring.

When the above examinations fail to reveal a removable cause of the obstruction, the pain, vomiting and abdominal distension continuing, without waiting for a confident diagnosis the physician should decide upon calling in the aid of the surgeon in order to have an exploratory incision made. Whilst awaiting operative procedure intense pain may be relieved by a single hypodermic injection of Morphia. The objection to Morphia as a routine is a real one. It relieves pain and paralyses peristalsis, and thus masks the symptoms and misleads the judgment of both the physician and surgeon regarding the gravity of the case, and so tends to the postponement of operative procedures till the patient has become poisoned by the toxins which accumulate above the seat of obstruction.

Lavage of the stomach should always be carried out before operating, and it often affords considerable relief to the vomiting whilst arrangements are being carried out for opening the abdomen. As a rule the stomach may be fairly well washed out

by directing the patient to swallow large draughts of tepid water containing a little Permanganate of Potassium.

Hot poultices of linseed meal, or cold compresses or ice-bags, according to the patient's sensations of comfort, may be applied over the entire abdominal surface. If a purgative has not already been administered, which is too frequently the case, the physician should not only abstain from prescribing it, but he should warn the patient and his friends of the danger of attempting to have the bowels moved by this means. Even when the case is strongly suspected to be one arising from faecal accumulation, purgation is fraught with very considerable danger at this stage of the obstruction.

The abdomen should be opened in the middle line between the umbilicus and pubes (unless when it is considered desirable to explore an old hernial sac). The incision should admit two fingers, and the first point which the surgeon should make for after exploring the hernial rings is the cæcum. This must be thoroughly examined, since if found empty the block is likely to be in the small intestine, whilst its distension will signify that the obstruction is somewhere in the great bowel. Should the cæcum be empty the fingers are to be directed into the pelvis, and search made there for any loop of bowel which is not distended; such an empty coil must obviously be on the distal side of the obstruction. The intestine is next passed between the fingers bit by bit till the obstruction is reached; the same process is applied to the colon should the cæcum be found full, the fingers being passed along the large bowel till the site of obstruction is reached. Should there be any great difficulty in following the intestine, the incision in the abdominal wall must be enlarged with scissors so as to admit the entire hand; the surgeon should avoid drawing out the intestines through the abdominal wound if possible, owing to the difficulty often experienced in returning them. When evisceration or evisceration is absolutely necessary the protruded bowel should be enveloped in cloths saturated with hot saline solution, and covered over with a layer of thin mackintosh.

The obstruction is then to be dealt with according to its nature—*Bands, Meckel's diverticula*, strangulations caused by *internal hernia at the foramen of Winslow, apertures in the mesentery* or *pouches in the peritoneum* must be divided as in external herniæ.

Intussusception should be reduced after firm pressure has been made on the tumour to dissipate œdema: the sheath must be compressed from below upwards so as to squeeze the intussusceptum backwards, avoiding traction on the entering loop as rupture is liable to occur. After complete reduction it is usually necessary to fold the mesentery upon itself in the direction of the long axis of the bowel and fasten the fold with sutures, in order to prevent a return of the condition. Should the bowel be found to be dead or if reduction is impossible owing to inflammatory adhe-

sions the tumour must be excised along with a portion of the dilated bowel above the intussusception.

Volvulus is most commonly met with at the sigmoid flexure, and the coil of bowel must be untwisted after emptying it; when this is found to be impossible, or when gangrene has already occurred, the twisted coil of bowel must be excised or an artificial anus established above the volvulus by colostomy. To prevent a recurrence, after untwisting, the meso-colon should be sutured to the parietal peritoneum.

Adhesions causing matting together of adjacent coils of bowel should, if possible, be separated so as to remove all kinking. *Cicatricial contraction* of the mesentery is also often present, and the gluing together of the intestines may be so intimate as to prohibit all attempts at separation, especially when malignant disease is present. In this latter case there is no resource left but to establish an anastomosis between the bowel below and above the occluded mass.

Stricture of the bowel, malignant or cicatricial, if found to be the cause of the obstruction must be relieved by resecting the stenosed area, cutting wide of all diseased tissue, the operation when performed upon the small intestine being known as *enterectomy*, and when on the colon as *colectomy*; the divided ends of the bowel are brought together by end-to-side anastomosis or by end-to-end suture. *Enteroplasty* is only applicable to rare and very circumscribed cicatricial strictures where there is no suspicion of malignancy.

Where the stricture is malignant and acute complete obstruction has occurred, the best procedure is to open the bowel above the seat of occlusion, and after the relief of urgent symptoms has been achieved and the patient has recovered from the shock of the attack, a second operation should be undertaken within a week.

When the mass is found to be irremovable the only course left to the surgeon is to make an anastomosis by connecting the divided end of the intestine above the growth with the colon, or to make an artificial anus when the malignant tumour is situated in the pelvic portion of the colon.

In rare cases the abdominal obstruction has been found to be due to *thrombosis* or *embolism* of the *superior mesenteric vein or artery*, in which case if the main trunk has not been involved the gangrenous portion of the intestine may be resected.

Gall-stones or *foreign bodies* when found to be the cause of intestinal obstruction should be removed by a free incision made in the bowel opposite to its mesenteric attachments, but above the site of obstruction; this latter should be carefully examined, and if ulceration or gangrene is present a piece of the bowel should be completely excised after removing the calculus or foreign body, which should never be pushed onwards.

Idiopathic dilatation of the sigmoid and colon (Hirschsprung's Disease) is more likely to cause chronic than acute obstruction.

When the accumulated fæces cannot be removed by massage and enemata the dilated colon must be excised after the establishment of an artificial anus, and an anastomosis made between the lower part of the small intestine and the pelvic portion of the colon.

In every operation for acute intestinal obstruction the contents of the distended bowel should be removed by enterotomy. An incision being made into the distended coil, a long glass tube attached to several feet of rubber tubing is inserted, and the contents siphoned off in order to prevent the poisoning liable to follow on the absorption of the toxins produced by the *Bacillus coli*. The opening into the bowel should be closed after thorough sterilisation by the insertion of a double row of sutures before returning the intestine into the abdominal cavity.

In all desperate cases where the cause of the obstruction cannot be sought for, or when found cannot be dealt with owing to the critical condition of the patient, the only thing available is to perform an *Enterostomy*. The surgeon seizes the first distended coil of bowel which presents in the abdominal wound, draws it out, and whilst an assistant clamps it with his fingers an incision is made into the gut and a Paul's glass double-flanged tube inserted and tied securely in position. After the bowel has been emptied into a receiver by siphoning through a rubber tubing attached to the Paul's tube the coil of bowel is returned to the abdomen, a portion of its circumference being attached by sutures to the parietal wound to prevent the tube falling back into the abdominal cavity. After some days, when the condition of the patient warrants a further operation, the cause of the obstruction may be again sought for and removed, the wound in the intestine being closed by a double row of sutures.

The older methods of dealing with acute intestinal obstruction by pouring in quantities of metallic Mercury into the stomach, inflating the colon by pumping in air, forcible massage of the abdomen, inversion of the patient's body, dosing with large amounts of Morphia or Atropine to paralyse peristalsis, and the continuous use of copious enemata and O'Beirne's long rectal tube, have been abandoned for the direct surgical procedures already mentioned.

The treatment of *chronic* intestinal obstruction should be undertaken before acute symptoms supervene; in the majority of cases the cause is malignant disease, fæcal impaction or the kinking of the bowel caused by inflammatory or tuberculous mischief. The treatment consists in the removal of the cause after laparotomy when this is possible, or by the establishment of entero-anastomosis or of a fæcal fistula by colostomy, or by excision of the rectum when the obstruction is within reach from the anus or by the sacral route.

The after-treatment of intestinal obstruction is almost as important as the surgical methods employed for the immediate

relief of the symptoms. The danger of shock is to be minimised by external warmth and large injections of warm saline solution into the rectum, or Murphy's method of continuous rectal infusion or intracellular injection may be resorted to. Strychnine hypodermically is usually indicated. When the precaution of a thorough wash-out of the stomach before operation has been seen to there will as a rule be no necessity to repeat the lavage and when the bowel has been well emptied before concluding the operation meteorism will seldom supervene, but should abdominal distension show itself a Saline purgative— $\frac{1}{2}$ ij. Sodii Sulph.—should be given every 2 hours or small doses of Calomel may be administered. Severe abdominal pain may be relieved by one hypodermic dose of Morphia combined with $\frac{1}{100}$ gr. Atropine, but morphia when possible should be avoided in order to minimise the paralysis of the inflamed intestine so liable to follow. No food should be permitted for the first 24 hours, but the mouth can be kept moistened by teaspoonfuls of water at short intervals.

INTUSSUSCEPTION—see preceding article on Intestinal Obstruction.

The physician will be wise who refrains from making any attempt at reducing the invagination; he should without delay requisition the services of the operating surgeon. Should surgical aid, however, be not immediately available, he will be justified during the delay in administering an anæsthetic and gently squeezing or kneading the sausage-shaped tumour through the abdominal wall as an assistant elevates the pelvis. Failing to dissipate the tumour by this gentle manipulation, he may try the effects of a large enema of tepid water, or he may distend the colon with air by means of a Higginson's syringe. Unfortunately, the partial reduction of the intussusception which often follows is liable to lead him to conclude that the blockage has been overcome, so that postponement of operation is decided upon with disastrous results, as the only hope for a satisfactory issue from operative procedures lies in their being resorted to without an hour's unnecessary delay.

IRITIS.

The most important element in treatment of acute primary iritis consists in the instillation of Atropine solution (1 in 100). The patient may be ordered to bed in a darkened room and a smart saline purgative should be administered, but when the symptoms are not very acute he may avoid bed by wearing dark goggles. Pain, which is generally a prominent symptom, may be allayed by hot, dry compresses, by hot stuping, or by adding Cocaine to the atropine drops. If all other means fail, hypodermic injections of Morphia may be required. When there is much congestion three or four leeches applied to the margin of

the orbit or temple give great relief. Blistering is still employed by some surgeons, but little benefit may be expected from it. As a rule, if wide and uniform dilatation follows the use of atropine, the case will soon yield. If there be much plastic exudation, and the atropine fails to enlarge the pupil widely, it must be pushed, a drop being instilled every five or ten minutes for six times with the view of dragging upon the adhesions. If this fails, the eye may be covered for the night with a piece of lint, smeared with atropine ointment.

Mercury should be freely given where the adhesions do not yield to atropine dilatation in order to prevent complete posterior synechia or adhesion between the iris and the anterior capsule of the lens, which may so increase the tension in the eye as to produce secondary glaucoma. In syphilitic cases the action of mercury must be kept up till there is evidence that the constitutional effects of the drug have been produced, after which the dose may be diminished. Salivation is seldom necessary, and should be avoided. Mercury is essential in most cases of iritis with much exudation of lymph, but in non-specific cases its action may be suspended as soon as this disappears. The influence of atropine should be maintained till it is clear that the danger of adhesions has passed away. In all ordinary cases the instillation of a drop may be repeated twice daily after the full effects have been produced.

In serous iritis, if a deposit form on the posterior surface of the cornea, it is sometimes recommended to tap the anterior chamber by inserting a fine cataract knife into it in front of the iris, and this may be repeated if the fluid accumulates again.

With a distinct rheumatic history, Salicylate of Soda may be given in full doses, also where mercury is indicated but cannot be tolerated. Better results may be obtained by Aspirin, which is also useful in gonorrhœal iritis.

Tuberculous iritis is best treated by rest and atropine without mercury; Tuberculin by the vaccine method has given excellent results. Turpentine in full doses internally (10 mins. every 4 hours) has been proved to possess remarkable power in causing absorption of exudations. Pilocarpine, Colchicine, Homatropine, and Physostigmine have been recommended, but the general management of a case of ordinary iritis may be summed up in the words—Rest, Atropine, and Mercury.

Good results have been obtained by injecting about $\frac{1}{2}$ gr. Calomel, suspended in glycerin or weak mucilage, into the tissues in the neighbourhood of the margin of the orbit.

Cyclitis or inflammation of the ciliary body is always present, and the atropine favours its resolution also, but should the ciliary body become much congested by the blood driven out of the iris in wide dilatation the instillation must be suspended.

In chronic iritis and cyclitis the same measures are indicated, and these may be aided by subconjunctival injections of saline solution.

Suppurative iritis and suppurative irido-choroiditis are generally the result of septic wounds, and little can be done to save sight, save by the evacuation of pus and irrigation with weak Perchloride of Mercury Solution. Pain should be relieved by Morphia hypodermically and Cocaine locally.

Sympathetic iritis is part of a sympathetic ophthalmitis, and must be promptly met by enucleation of the primarily affected eye and the frequent instillation of a weak Sublimate Solution into the secondarily affected eye.

In ordinary iritis where, in spite of atropine and mercury, or where the case has been neglected from the first, and adhesions have formed which refuse to yield to atropine, they may require to be treated by operative measures. After the subsidence of the iritis an iridectomy should be performed when the posterior synechia is complete in order to restore the circulation between the anterior and posterior chambers, but it is most undesirable to operate whilst the inflammation is active owing to the exudation of lymph which is sure to follow.

ITCH—see **Scabies**.

JAUNDICE.

Under the different headings—Gall-Bladder, Gall-Stones, Liver Diseases, &c.—the treatment of this sign or symptom is discussed, and in all cases treatment must be directed to the primary cause of the icterus. The old division of jaundice into obstructive or hepatogenous and hæmatogenous is no longer strictly admissible. All forms of jaundice are obstructive, whether caused by a gross blocking of the main duct as in catarrhal and gall-stone cases or in the more obscure cases as Weil's Disease and *icterus gravis*, where some toxin exists in the blood which renders the bile so viscid that it blocks the finer biliary passages. The appreciation of this etiological factor is a considerable aid in assisting therapeutical methods.

Catarrhal jaundice caused by swelling of the mucous lining of the common duct is relievable by the measures detailed in the article on inflammation of the bile ducts on p. 323. The jaundice produced by gall-stones, stricture or cancer of the ducts, malignant disease pressing on the ducts outside the liver, or in the head of the pancreas, can obviously only be met by surgical measures when these are practicable.

The jaundice due to the hepatic congestion caused by mitral and tricuspid disease can only be relieved by cardiac tonics aided by saline purgatives and rest.

Icterus neonatorum usually passes off when attention is given to the condition of the bowel and to measures calculated to improve digestion combined with the admission of a liberal supply of pure air, being either the result of catarrh of the ducts or of some temporary blood condition which renders the bile more viscid.

It is to be distinguished from the rare form of congenital jaundice due to absence of the ducts, which is beyond the reach of remedies.

In the group of cases formerly known as hæmatogenous, and now recognised as hæmohepatogenous jaundice, where no obvious gross obstruction exists, the indication for treatment is the presence of the toxæmia, which should be met by eliminatory measures as saline purgatives, diuretics and diaphoretics. The source of the poison being probably intestinal, such disinfectants as Calomel in small doses, Salol, Naphthalin and other bowel antiseptics may be tried. Free lavage of the colon in such cases may be safely persisted in; the recent craze for feeding with the Lactic Acid bacilli may be indulged in, but little is to be expected from it even if the toxins are the result of microbic changes. Good acid buttermilk or home-made Koumiss is, however, an excellent dietetic article in all cases of jaundice.

Search should be made for inorganic poisons as phosphorus, antimony or arseniuretted hydrogen, and ordinary obstructive jaundice may be eliminated by a careful examination of the urine, which shows no increase of the bile acids and salts; these may be entirely absent, and the stools will contain bile pigment and the *proteus fluorescens* bacillus of Jaeger may be detected. In most acute forms of this type of *icterus gravis* the high temperature will require to be checked by sponging or cold packs, and the dangers of renal congestion or albuminuria averted by counter-irritation over the loins and intracellular injection of saline solution, in addition to purgation with Mag. or Sodæ Sulphas. Though the treatment of every form of jaundice is thus to be directed by an assault upon its primary cause, and all methods of treating the icterus as if it were a disease and not a mere symptom or sign should be regarded as quackery, nevertheless several empiric remedies may be legitimately employed when the cause is found to be irremovable.

Salicylates are regarded as possessing the power of rendering the biliary secretion more fluid or less viscid, and the soda salt may be given in full doses (15 grs.) thrice daily. Ragwort (*Senecio Jacobæa*), Carlsbad, Vichy and other alkaline waters, Chloride of Ammonium, small doses of Calomel, Euonymin, Podophyllin, Iridin, Oil of Turpentine, diluted Ac. Nit.-Hyd., and many other empiric agents are sometimes employed with success, but it is manifestly irrational to prescribe drugs which are believed to stimulate the function of bile formation when the common duct is blocked by a calculus or by a malignant growth. Occasionally the absence of bile in the intestines in the markedly obstructive types of jaundice may be remedied by the administration of dried Ox Bile in keratin-coated pills, which will pass unaltered through the stomach. The value of Carlsbad treatment apparently lies in the powerful eliminatory effect of large quantities of fluid which remove out of the system bile pigment and bile salts by the urinary, intestinal, and cutaneous tracts.

Pilocarpine is a drug of much value ; it possesses the power of diminishing the intolerable itching of the skin caused by the influence of the reabsorbed bile upon the terminal sensory nerves. It may be given once in every 36 or 48 hours in hypodermic doses not exceeding $\frac{1}{4}$ gr. in both the obstructive and hæmohepatogenous types of icterus, and by some it is even claimed to possess specific action in the latter form of jaundice. The injection should be preceded by a hot pack or hot bath to induce sweating.

Iodide of Potassium or Sodium in large and fully diluted dosage sometimes relieves itching, and a prolonged immersion in a strong Sodium Bicarbonate bath often affords a considerable degree of relief.

JOINT DISEASE.

The term is a wide one, and embraces a number of affections whose treatment will be found under the head of the primary affection as Rheumatism, Rheumatoid Arthritis, Gout, Actinomycosis, Locomotor Ataxia, Pyæmia, &c.

When the inflammatory process is confined to the synovial membrane the term "Synovitis" is employed, and under its own heading the treatment of this form of joint affection will be detailed.

Arthritis is the name usually employed as a synonym for Joint Disease, and implies the condition in which periostitis with osteomyelitis affecting the ends of the bones entering into the formation of the joint coexists usually with synovitis. It may be acute or chronic.

Acute arthritis the result of a septic infection, either caused by penetrating wounds or by *Staphylococcus* or *Streptococcus pyogenes* carried by the blood-stream, must be promptly treated by absolute rest for the joint and the entire limb. As disintegration of the articulation is liable to ensue the limb should be immobilised in the position in which a permanent ankylosis will insure the least inconvenience. Cold water, ice, Leiter's Tubes, or evaporating lotions should be applied as in the treatment of ordinary synovitis. Occasionally pain yields more promptly to the application of Spirit Lotion covered in by oiled silk—a method which places a superficial joint like the knee in the position of an internal part, encouraging the natural resistant powers of the tissues to have fullest scope in their struggle for resolution by permitting a free flushing of the parts with arterial blood. Bier's method of causing an artificial passive hyperæmia acts in the same manner. An elastic bandage is applied above the joint to cause such a degree of pressure as will retard the venous circulation without diminishing the arterial supply. The hyperæmia is kept up for about 20 hours, after which the bandage is removed and the limb elevated to dissipate anasarca, and in 2 to 4 hours the pressure is reapplied, the duration of pressure being gradually shortened as the inflammatory symptoms subside. Klapp's

suction-bell acts in the same manner, but is only applicable to joints like those of the fingers. Leeching may be employed when pain is severe, and any local anodyne application like Belladonna may be used. Blistering is seldom of much use.

The weight and pulley may be employed where the tendency towards flexion is present.

Should fluid accumulate in the joint, the hypodermic needle may be employed for diagnostic purposes, and if its purulent nature is evident, aspiration should not be performed, but the joint must be freely incised without delay to completely empty the purulent collection, after which the cavity is to be flushed by a stream of warm Saline solution mopped out by a strong antiseptic and thorough drainage provided. Some surgeons inject a stream of Hydrogen Peroxide, others leave the joint filled by Iodoform emulsion as in the treatment of tuberculous arthritis. When extensive general destruction of the synovial membrane is found involving the capsule of the joint the entire cavity and any pockets connected with it may be gently packed with Iodoform gauze. In most instances much good may be accomplished by vaccine treatment after the specific microbe has been detected in the joint secretion or pus.

Where the operation of incision is resorted to early, a good useful joint may be fairly hoped for. Secondary abscesses in the neighbourhood of the joint must be promptly incised, and these should be flushed out and injected with the hydrogen peroxide or other antiseptic. In severe cases ordinary drainage will often fail, and the method of *continuous* drainage must be carried out by means of which the circulation of a weak antiseptic solution through the joint is kept up.

In cases coming late under observation, hopeless destruction of bone and cartilage may be discovered which will require the radical surgical measures suitable for the treatment of chronic joint disease : even amputation of the limb may be demanded to save life.

In mild cases the rest should not be too prolonged, and when the more acute symptoms have been thus combated, and all pain has disappeared for a time, passive motion may be carefully commenced, the surgeon feeling his way cautiously. Many joints have been hopelessly destroyed by rest prolonged long after the inflammatory action had subsided. It is this mistake which enables the unscrupulous bone-setter to thrive. Getting a joint affection in which all inflammatory action has long ceased, owing to treatment by some surgeon whose timidity prevents him beginning passive or forcible movements, the bone-setter pronounces the limb to be " out of joint," and after a few forcible movements he assures the patient that he has " put in " the joint, and the mobility and painlessness of the limb which follow apparently corroborate his statements. When the value of early massage and movements of a passive or forcible nature are

universally appreciated, the principal occupation of the bone-setter will be gone. The arthritis which sometimes follows typhoid, influenzal and pneumococcal infection usually yields readily to the above measures.

Thickening from exuded inflammatory products outside the joint or effusion into the synovial sac may be dissipated by strapping or by the uniform continuous pressure of a Martin's rubber bandage. Any old sinuses in the neighbourhood of the joint should be injected with Bismuth Jelly.

Chronic joint disease, when rheumatism, gonorrhœa and rheumatoid arthritis are excluded, nearly always is tuberculous, commencing either in the synovial membrane or in the bones. In the former case the clinical type of the disease is recognised as "white swelling," which, if neglected, passes into the type in which the articular ends of the bones become finally invaded, causing destruction of the joint and abscesses.

The treatment of tuberculous joint affection has been described under Hip-Joint and Knee-Joint Disease, and is in the main applicable to all the other articulations affected by the tubercle bacillus. The principles to be carried out are in the first place those indicated in all other forms of localised tuberculosis—Open air, improved feeding with abundance of fats (Cod-liver Oil, &c.) and a carefully carried out course of Vaccine treatment by the injection of minute doses of Tuberculin regulated by a series of observations on the opsonic index and temperature.

Local treatment consists, as in acute arthritis, of absolute immobility of the joint surfaces for a very prolonged period in the most suitable position of the limb should ankylosis become established, extension by weight and pulley to diminish intra-articular pressure and the induction of passive hyperæmia by Bier's method, together with the application of soothing lotions for the relief of pain. Seldom are leeching, blistering, the actual cautery or severe counter-irritation indicated in tuberculosis of joints. The aim of the surgeon should be to assist the natural efforts towards resolution by these conservative or preventive methods, perseveringly employed for many months or a couple of years, without any attempt at passive motion or operative procedures as long as hopeless disintegration of the joint structures has not occurred. The injection of Iodoform emulsion (10 per cent. in glycerin) is a valuable method of sterilising the joint after this has been washed out through a small canula by a stream of saline solution, and where the disease is limited to the synovial membrane a speedy improvement may be expected, and the X rays applied to superficial joints have been productive of good. Some surgeons publish excellent results from the injection of 5 mins. of a 10 per cent. solution of Zinc Chloride.

When disorganisation of the joint has occurred the operation of *incision* suitable in acute arthritis is contra-indicated unless carried out in a more radical manner. The whole cavity must

be freely opened by a large incision, and the operation of *arthrectomy* or *erasion* performed. After freely opening the articulation, and if necessary doing it in such a manner as will cause disarticulation, the diseased synovial membrane is to be completely removed by scraping or dissection, and any diseased cartilage cut away at the same time. The joint is next swabbed firmly with a strong Antiseptic or dusted with Iodoform, and the skin-wound sutured without any provision for drainage if the surgeon is satisfied that he has been able to remove every scrap of the diseased structure.

Where the exploration of the joint reveals disease already affecting the bones, a more radical operation than arthrectomy is clearly indicated. If the bone disease be limited to the layer beneath the synovial membrane gouging should be resorted to. *Excision* or *resection* of the joint may be demanded, the affected bone being cut away along with the articular cartilages and synovial membrane in order to establish firm osseous ankylosis in such joints as the hip and knee and a fibrous union with a movable joint when the wrist, elbow and shoulder are operated upon.

Rarely will *amputation* be necessary, and it should only be resorted to when the above measures fail or where secondary suppurative infection threatens to exhaust the strength of the patient, or where amyloid disease is supervening. The introduction of the treatment of long-standing sinuses by the injection of Bismuth Jelly has considerably lessened the necessity for amputation, as these often heal up completely after resisting scraping and dissection and the introduction of powerful antiseptic solutions.

It is hardly necessary to insist upon the importance of the rest cure being persevered with for a long period and of the dangers arising from any attempt to move the joint by active or passive motion till all evidence of the subsidence of the tuberculous inflammation has passed away. Disastrous results are more liable to follow premature movements than in the case of the more acute forms of arthritic infection after the subsidence of inflammation.

KALA-AZAR—See under *Piroplasmosis*.

KELOID.

This term is usually applied to the hypertrophic changes which occur in scar tissue, and the "true" keloid found in the skin without any evidence of previous wound is believed to be due to the same unknown causes operating upon minute abrasions.

Since most of the keloid growths tend to disappear they should not be interfered with till watched for a considerable period; all that is necessary is to protect the growth by a layer of adhesive plaster spread upon soft chamois or where pain or itching is

present to paint the scar tissue over with a layer of Salicylic Collodion.

Should the keloid be upon any part of the body where uniform elastic pressure can be applied then a rubber bandage put on fairly tightly will often cause its disappearance. Finsen's Light and the X-ray treatment have in recent years afforded some very satisfactory results.

Fibrolysin should be tried in every case before resorting to operative treatment, twelve to fifteen injections being made at some little distance from the scar tissue. As return is so often observed to follow excision, this should be avoided as long as no obvious disfigurement results: a number of deep linear scarifications may be made so as to divide the vessels feeding the keloid, and when this method has been combined with electrolysis, fibrolysin, massage and the X-rays the best has been done for the case. Should the claw-like processes continue to grow outwards into the surrounding skin the surgeon must treat the case as if it was a fibro-sarcomatous growth, and excise the hypertrophied cicatrix with its numerous prolongations cutting clear of all fibrous structure and filling in the gaps in the skin with numerous Thiersch grafts. Caustics should never be employed for the destruction of the growth, as return in an aggravated form is very liable to follow their use.

KERATITIS—see under Cornea.

KERATOSIS.

This term is applied to several distinct skin affections characterised by an accumulation of the horny cells of the epidermis, such as occurs in the milder forms of ichthyosis. The treatment of this latter condition, known as Keratosis Pilaris, has been already described under Ichthyosis. It consists in repeated bathing and cleansing with soap and friction, and the continuous inunction of the affected parts by an emollient ointment or oil.

Keratosis resulting from chronic arsenical poisoning usually affects the palms and soles, and yields naturally upon stopping the administration of the drug and keeping the thickened skin well moistened by any greasy ointment. If the accumulated cells fail to disappear under such simple treatment a paste of Salicylic Acid will speedily remove them.

Keratosis Follicularis (Darier's Disease, Ichthyosis Sebacea Cornea) is the result of infection by psorosperms, and is refractory in its treatment. The crust-topped papules should be removed as soon as they appear by the application of the thermo-cautery, and after cleansing and mild friction in a warm alkaline bath to remove the nodular masses a paste of Salicylic Acid (1 part in 8 parts of glycerin) should be applied.

The last-mentioned treatment is also the most suitable for Keratosis Nigricans, but should the wart-like accumulations

continue to grow in spite of salicylic treatment they may be excised.

Keratosis affecting the palms and soles, when not of arsenical origin, is rebellious to treatment. After thoroughly softening the cells with alkaline soap and prolonged immersion in hot water Salicylic Paste (1 in 8) should be applied perseveringly, or the same agent may be employed in double strength in the form of plaster or as a solution in ether (1 in 10).

KIDNEY DISEASES—see under Bright's Disease, Pyelitis, &c.

KIDNEY, MOVABLE—see under Glénard's Disease.

KNEE-JOINT DISEASE.

The treatment of simple inflammatory affection of the synovial membrane of the knee is dealt with under Synovitis. Arthritis of septic nature, when involving the joint, is treated as described in the article on Joint Disease by immobilising the limb, by inducing hyperæmia, and when extensive suppuration occurs by freely laying open the joint and dividing the ligamentum patellæ, applying an antiseptic and packing the cavity with gauze after simple incision or washing out the joint has proved ineffectual in checking the inflammatory process.

Chronic disease of the knee-joint in the great majority of cases, when rheumatic affections are excluded, may be accepted as of tuberculous origin. The measures detailed under Hip-Joint and Joint Disease are to be carried out in addition to open air, improved feeding and perfect hygiene.

Local measures, as already mentioned, will embrace prolonged absolute rest by means of splints and extension to correct any abnormal position of the limb. Whilst active mischief is present the *entire limb* should be rendered immovable. Pain is to be met by cold or warm applications, counter-irritation by means of blisters or the cauterizing iron, leeching, or anodyne liniments, or lotions. As the more active symptoms subside and abnormal position of the limb is rectified it is of the very greatest moment that the patient should be rescued from the atmosphere of his bedroom and tempted to spend as large a portion of the day as possible in the open air. By means of a Plaster of Paris casing or a leather splint this may be managed without much danger, but the application of a neatly fitting Thomas's Knee Splint is much better. When it is in use the joint is open to daily inspection or to the convenient application of local remedies, as strapping over Scott's dressing, Iodine, &c., or the application of a Martin's rubber bandage. With an accurately fitting splint and a thick sole on the boot of the sound foot the patient can be permitted to move about.

When the disease is confined to the synovial membrane a good result in young subjects may be expected without resorting to

operative measures ; in very slow cases Iodoform emulsion may be injected or the cavity sterilised by washing through a canula.

When signs of abscesses occur these should invariably be incised before the skin is allowed to become infected ; rigid antiseptic precautions being undertaken, the joint should be opened and a stream of warm antiseptic liquid employed to thoroughly cleanse and sterilise the cavity. Weak Iodine is very suitable for this purpose. After its use the wound should be carefully sealed up without drainage.

Where evidence of considerable disintegration of the joint exists the best procedure is to resort to arthrectomy or erosion. An elastic bandage and tourniquet being applied, the joint should be freely opened by turning up a rectangular flap, the tubercle of the tibia being divided without separating it from the patella and without cutting, if possible, the ligamentum patellæ. Every recess in the cavity being thus exposed, the synovial membrane is dissected or curetted off the bones and from the lateral and posterior ligaments ; the crucial ligaments together with the semilunar cartilages are next removed, and the surfaces of the bones scraped or gouged so as to leave no trace of diseased tissue behind. The tubercle of the tibia is fixed in position, and after Iodoform has been freely dusted over the scraped surfaces the joint is sealed up by suturing without any provision for drainage, and immobilisation being secured by a suitable splint, firm ankylosis may be expected within a period of about 12 months. Occasionally some degree of mobility of the joint may be obtained, but as a rule it is not wise to try for this, as recrudescence of inflammatory action is liable to supervene after attempts at passive movements. The best results as regards mobility are obtainable in those cases undertaken early, before the destruction of the crucial ligaments has occurred.

If upon opening the joint by a free semilunar incision the articular surfaces are found to be extensively and deeply diseased, the best procedure is to resort to excision of the joint. The patella, if found to be sound, is turned upwards, its cartilaginous layer being afterwards sliced away, the lateral and crucial ligaments are divided, and the saw being laid on, a slice of bone is removed from the lower end of the femur and from the upper end of the tibia, taking care that the sections are made in the horizontal plane, so that ultimately firm osseous union will occur between the femur and tibia in a straight line. To facilitate this desideratum some surgeons resort to the use of ivory pegs, steel nails or needles in order to avoid angular deformity by keeping the leg in exact line with the thigh ; where deformity already exists, the hamstring tendons should be divided. Complete immobility must be secured, as after the operation of erosion, by the use of a long back-splint or a plaster or a leathern casing, which must be worn for at least a year in order to prevent the yielding of the new osseous tissue. The best results are obtain-

able in operations undertaken after puberty and before the age of about 30 years.

Amputation will be the only course open to the surgeon when the above methods have failed; or when, during past middle life, septic infection has been added to the tuberculous.

Genu Valgum (knock-knee) and Varum (bow-knee) are described upon p. 358.

Deformities arising from ankylosis in the semiflexed position must be met not by forcible extension, and as a rule the weight and pulley cannot be relied upon. The best procedure is to open the joint and break down the adhesions and cut the hamstring tendons, or if necessary a wedge of bone may be removed from the lower end of the femur and the upper end of the tibia to enable the leg to be brought into line with the thigh.

Loose Cartilages may often be dealt with successfully by transfixing them with a strong steel needle, after which they can be cut down upon by a deep incision and turned out. More frequently, however it will be necessary to perform an arthrectomy, and after opening the joint by an incision at the side of the patella the cartilage should be dissected out, the joint washed by a stream of sterilised saline and sealed up. It is worth while in the case of adults to try the effect of a suitable apparatus applied to the limb which will prevent all movements save those of flexion and extension before resorting to arthrectomy.

Morison has pointed out that the chief cause of internal derangement of the knee joint is not merely looseness, but fracture of the semilunar cartilage, which must be removed by operation when an active life is necessary, and he emphasises the great dangers of sepsis following all operations on the knee joint.

LABOUR.

The practitioner should never forget that nine out of every ten women in labour would deliver themselves safely if left alone, and that an attendant who is unable or unwilling to approach the birth canal with surgically clean hands merely adds a considerable element of danger to these cases, while in the small minority where interference is required safety from the risks of labour will be dearly bought if the hand which brings it introduces into the vagina the germs of puerperal fever.

In the *first stage* of labour the practitioner should accustom himself to make out the position of the foetus and the amount of progress by abdominal palpation. A vaginal examination is only required to discover the degree of dilatation of the os and possible prolapse of the cord. Before making it the hands should be scrubbed with soap, warm water and nailbrush for 5 minutes, special attention being paid to the nails, which should be kept carefully trimmed. Methylated spirit (70 per cent.) is then swabbed on with cotton-wool, and the hands are finally immersed in 1 in 2,000 Perchloride or Biniodide of Mercury for 2 to 5

minutes. The vulva is then washed with warm water and sterilised liquid soap and sponged with plenty of 1 in 2,000 perchloride or drachm to the pint lysol solution. The hair on the labia, unless very scanty, should be clipped short. The examination is made with the hand dripping with antiseptic, and no other lubricant is necessary. Rubber gloves are now very commonly worn for vaginal examinations. It is quite true that one cannot guarantee an aseptic skin, and that one can guarantee an aseptic glove. Considerable experience of students and nurses has taught me, however, that a rubber glove gives a dangerous sense of security to those who are not perfectly familiar with antiseptic methods. It is at once recognised that the bare sterilised hand is contaminated and must be reimmersed in antiseptic if it has accidentally touched the bedclothes, the patient's thighs or one's own person. The same fact is not so easily grasped when one is relying on a rubber glove; one even sees well-meaning individuals after a cursory sterilisation of the hands carefully transferring all the surviving microbes on the skin of the left hand to the surface of the right-hand glove in the lengthy process of fitting each finger into place, and then proceeding to inoculate the vagina with them. There is only one way of safety for the obstetrician, and that is to develop an aseptic conscience. If he has that, he will be perhaps a little safer, and certainly easier in mind with gloves on; if he has it not, gloves may make him more confident, but they cannot render him less dangerous to his patient. The gloves should be fresh boiled in a batiste bag, and shaken out of it into 1 in 2,000 Perchloride or Biniodide. They should be put on wet with the aid of a gauze swab dripping with the lotion, and never with the bare hand. The hands should be as carefully sterilised as if gloves were not to be worn, and the gloved fingers should be kept in sight from the time they leave the lotion basin till they enter the vagina so as to avoid the possibility of contamination. Gloves must be worn if the patient is suffering from syphilis, or if the doctor's hands are rough, chapped, abraded, or have been recently exposed to septic substances—*e.g.*, pus or fæces.

After making out the size of the os and observing the frequency and force of the pains the doctor can make up his mind whether or not to leave his patient for the time. If the first stage is slow and the patient is becoming tired and fretful he is likely to be pressed to give some relief. Chloroform should not be given unless there is a prospect of delivery within two hours at most. Ergot is totally inadmissible. Quinine is unreliable as an oxytocic. If the os is still far from fully dilated it is well to give Morphine ($\frac{1}{8}$ or $\frac{1}{4}$ gr.) combined with Hyoscine ($\frac{1}{100}$ gr.) hypodermically. This may be repeated in two or three hours if necessary. In some cases the result is disappointing, but satisfactory in the majority, the patient dozing off between the pains, which often improve in frequency and force. Light nourishment

should be given in a tedious case, but no alcohol. It is a mistake to keep a patient walking about too much. If she is tired she should lie down in bed and rest as much as possible. During this stage the bowels should be well cleared out by an enema, and everything prepared for the delivery.

In the *second stage*, the commencement of which may usually be diagnosed by the altered character of the pains without vaginal examination, chloroform may be given on a Skinner's mask with each pain, but avoiding full anæsthesia with loss of reflexes, which delays the pains and tends to produce atony of the uterus, with consequent post-partum hæmorrhage. The anæsthetic may be given more freely when the head is on the perineum, and should be eased off when delivery has occurred. If the membranes are still intact they should be ruptured with the finger during a pain, or a sterilised metal stilet or hairpin may be used. As the head comes down on the perineum the attention of the accoucheur is directed to the prevention of a rupture. Many methods have been at different times recommended to attain this desirable end, and the impartial critic who has faithfully tried them will be inclined to say that all are equally disappointing. That most in fashion at present, and as good as any, is to pass the left hand between the patient's thighs as she lies on her side and keep the tips of the fingers pressed on the child's vertex, so as to keep it in contact with the pubes and to retard its progress to some extent. The fingers of the right hand may be used at the same time to resist the progress of the head if the pains are very violent, but no direct pressure should be put on the perineum. The mother, if conscious, should be told not to hold her breath or bear down during the final pains. When the head has been delivered the accoucheur should always ascertain whether the cord is round the child's neck, and if it is should slip it over the shoulders if a long enough loop is available, or cut and clamp it with forceps if it is very tight and unyielding. Care must be taken in the delivery of the shoulders lest a partially lacerated perineum be still further injured. The cord should not be tied until it has ceased to pulsate.

Forceps in Non-Obstructed Labour.—It should be the general rule that forceps are not to be used before the os is fully dilated. Until that stage is reached the prolongation of labour is practically unattended with risk to either mother or child. It is now recognised that a prolonged second stage is dangerous to both, and the classic indications for forceps are a rising pulse and temperature, heat and dryness of the vagina, and exhaustion of the mother, or a marked alteration in the foetal heart or the passage of meconium. In many cases the wise obstetrician will intervene long before such symptoms appear, and, speaking generally, the question of forceps arises whenever the second stage has lasted for 2 hours and shows no signs of speedy termination. If the head is not steadily advancing; if the pains are

small, weak and ineffectual ; if the mother is a primipara of over 30 ; or if the first stage has been lengthy and trying, the timely application of forceps will save the patient from a prolonged second stage and its effects—a fatigued and more or less atonic uterus, and an exhausted nervous system which may take months to regain its normal elasticity. Added to this is the fact that delivery by forceps, skilfully conducted, is probably safest for the perineum. In applying forceps the practitioner should remember to boil the instruments, to sterilise his own hands and the patient's vulva, to pass the catheter, and to deliver very slowly and with frequent pauses so as to avoid laceration of the perineum. He may safely disregard the presence or absence of pains. After delivery it is well to give a copious hot douche of drachm to the quart *lysol* or *cyllin* solution.

Third Stage.—After the delivery of the fœtus no attempt should be made to knead or compress the uterus, as the result is likely to be a partial and irregular contraction which will probably delay instead of hastening the extrusion of the placenta. The hand may rest lightly on the fundus, so that warning may be got if the organ becomes distended with blood from post-partum hæmorrhage. It is as well to roll the patient over on her back, as in that position air embolism is even a rarer accident than in the left lateral position, and expression of the placenta is more easily carried out. While waiting for the placenta to separate it is advisable to introduce any sutures that may be necessary in the perineum. This is most easily done with a large half-circle needle, held either in the fingers or in a needle-holder and threaded with silkworm gut. The suture should pass through the skin and under the surface of the laceration, emerging in the middle line, to be reintroduced and brought out through the skin on the opposite side. Two or three such sutures suffice to unite even the most extensive lacerations. They may be tied immediately or secured with a single knot which is completed by a second after the delivery of the placenta. The expulsion of the placenta from the uterus into the vagina is shown by the rising of the uterus higher in the abdomen, while it becomes smaller, firmer and better defined, and by the fact that on lifting it upwards the cord is not pulled on. Usually this occurs in 5 to 20 minutes after delivery of the child, but the placenta need not be treated as “retained” and manually removed unless it is still in the uterus at the end of an hour. When the placenta has left the uterus normally the fundus should be grasped firmly and pressed downwards and backwards so as to drive the placenta out through the vulva. It is received in the hand, and the membranes pulled away by gentle traction. They should not be twisted into a cord, as this is likely to result in tearing off part of them. The expressed placenta and membranes are then examined to see that everything is complete. The vulva is sponged clean with antiseptic solution, an antiseptic pad is put in place, and the binder

applied. When a laceration has been sutured the nurse should be warned to sponge the perineum with 1 in 2,000 perchloride every 4 hours for the first 3 days, every time the bowels or bladder act, and every night and morning for a fortnight. The attendant should not leave the patient's house for half an hour at least after delivery. Before leaving he should examine the uterus, and if it is not firmly contracted a drachm of Ext. Ergot. Liq. should be given. If the patient's pulse is above 100 and the uterus flabby it is well to wait a further half-hour for fear of post-partum hæmorrhage.

Diet should be light and consist mainly of slops for the first 2 days. An aperient should be given on the second night, and after the bowels have acted the patient may have boiled fish, a little chicken or a lean chop, and gradually return to ordinary fare. She may rise at any time from the seventh to the fourteenth day, according to her condition; but I can see no possible advantage in forcing her to rise on the second day, as some German authorities have been advising recently. In this as in many other things it is as well not to have a hard-and-fast rule, but to be guided by the patient's condition and to some extent by her inclination.—R. J. J.

OBSTRUCTED LABOUR.

The practitioner will diagnose obstruction when strong, regular and frequent pains are present, and yet the head either refuses to engage in the pelvic inlet, or if it has engaged, ceases to advance. Treatment will largely depend on the diagnosis of the nature of the obstruction to its progress. If assistance can be procured, it is wise to obtain it, as it is not easy to manage a case of obstructed labour single-handed.

1. *Malpresentation with a Normal Fœtus and Pelvis.*—A common cause of delay is the persistence of an occipito-posterior presentation. Rotation of the occiput forwards would probably occur in the majority of these cases if left alone, but when labour has already lasted a long time and the patient is becoming exhausted with her efforts, it is good practice to interfere. An attempt should be made under chloroform to rotate the head by means of a hand introduced into the vagina, and forceps may be applied immediately before the hand is withdrawn. Should the attempt fail, forceps may be applied and traction made downwards and backwards at first. The head may be delivered with the occiput posterior, but the perineum is very apt to suffer extensive laceration, and traction should be made as gently as possible so as to save it. As the head is brought down the normal rotation often occurs. When this has happened the forceps must be removed and reapplied.

Face presentations often cause delay through persistence of an occipito-anterior presentation. If the head is not fixed, an attempt should be made to convert this into a vertex presenta-

tion by pushing up the chin with two fingers in the vagina, while the child's breech is carried towards the chin, so as to promote flexion. If the chin cannot be dislodged plenty of time should be given, as the chin often rotates forwards quite suddenly at the last and the labour is speedily over. Failing this, an attempt may be made to rotate the head with forceps, and should this fail perforation must be done.

In brow presentations an attempt should be made to convert into a vertex or mento-anterior face presentation, whichever is easiest, if the head be not fixed, and, failing this, version should be done. If the head is fixed, an attempt at forceps delivery may be made. That failing, the only resource is perforation or symphysiotomy.

In breech presentation, the forceps should first be tried, care being taken that they are applied accurately over the trochanters. That failing, a fillet or a blunt hook may be used.

2. *Want of Normal Proportion between the Fœtus and the Passages.*—This may be due to an abnormally large or deformed fœtus, or to a narrow pelvis, and much less frequently to tumours blocking the pelvic cavity, or to stenosis of the maternal passages caused by injury or disease. In the treatment of these cases it is important to recognise the cause and degree of obstruction.

If the patient is a multipara, the history of her previous labours is of importance in deciding on the proper measures to be taken. If she is a primipara, an anæsthetic should be given and the dimensions of the passages ascertained either by the aid of a pelvimeter or by the introduction of the hand into the vagina. It is hardly necessary to say that the strictest antiseptic precautions must be observed both during the examination and subsequent treatment.

The practitioner should first decide whether Cæsarean Section is indicated. The indications are—(1) A history of embryotomy in previous labours; (2) a contracted pelvis, with a true conjugate of less than $3\frac{1}{4}$ inches if the child is alive, or less than $2\frac{1}{2}$ inches if the child is dead; (3) the presence of an ovarian cyst or a myoma blocking the pelvis, or of a carcinoma of the cervix, or of dense cicatricial adhesions narrowing the vagina. When the operation has been decided upon, no further vaginal manipulations should be made, for fear of septic infection. The patient should be prepared for operation (see Operations, Treatment of). The operation may be done without an assistant other than the chloroformist. An incision is made from the umbilicus to the pubes, exposing the uterus. A 6 to 8 inch incision is then made through the uterine wall and the fœtus pulled out by the legs. The membranes and placenta are then peeled off the interior of the uterus, which is brought out through the abdominal wound for convenience in suturing. A continuous catgut suture unites the mucous membrane, and a second row of catgut sutures is

employed to close the remainder of the wound. The hæmorrhage from the uterine incision is not excessive, and may be neglected, even if the placental site is opened; the sutures completely control it. The abdominal wound is then sutured with silk-worm-gut; some operators recommend that these sutures should include the superficial layer of the uterus so as to fix that organ to the back of the anterior abdominal wall and prevent general peritonitis should the uterine wound become infected from the vagina. The whole operation may be completed in about 15 minutes. In favourable cases, where the patient has not been allowed to go on to the point of exhaustion, and where repeated vaginal examinations and attempts at delivery have not been made, the mortality is very low and the results very good.

The second question that the practitioner should settle is whether pubiotomy or symphysiotomy should be done. These operations are eminently useful in the type of case where contraction exists to such a degree that delivery has been previously effected through the natural passages, but at the expense of the life of the fœtus. The increase in the conjugate gained is usually enough to permit of the delivery of a living child. The operations are easy of performance, but the after-results depend so much on the nursing that they cannot be recommended to the general practitioner, and are better left to specialists.

In the minor degrees of contraction above $3\frac{1}{4}$ inches the choice of the practitioner lies between forceps and turning. If forceps are chosen, plenty of time should be allowed for the head to mould, as many failures are due to want of this precaution. Walcher's position, with the patient on her back on a high table and the thighs hanging down over the edge of it, with the feet clear of the ground, is of great assistance. It may be used at intervals during the period of waiting to assist the head in entering the pelvis. Should the head refuse to enter, the idea of applying forceps must be abandoned and some other means of delivery adopted. Turning permits of the head moulding itself more easily to the pelvis. It exposes the child to very considerable risk, increasing enormously with the degree of obstruction, as the delivery of the after-coming head becomes more difficult and lengthy. The practitioner should be prepared to apply the forceps on the head the instant the body is delivered, as the usual methods are fairly certain to be ineffectual and only waste valuable time. Turning should not be attempted when labour has been in progress for a long time and the waters have drained away.

Finally, perforation may be called for. It should be looked on as a last resource, and a confession of failure on the part of the obstetrician. It is, of course, the best method in a contracted pelvis when the child is dead, unless the degree of con-

traction absolutely indicates Cæsarean Section (true conjugate under $2\frac{1}{2}$ inches). It is also indicated after repeated and ineffectual attempts at forceps delivery, or when turning has been done and the head cannot be brought through the pelvis. It may be the only method open to a practitioner who is confronted with a case which he cannot deliver and who is without the necessary assistance or appliances for a Cæsarean Section. If perforation has been decided upon after a fruitless attempt at forceps delivery, it is wise to leave the forceps on the head and allow the nurse to hold them, as in this way the head is steadied and the perforation made easier. The perforator should be thrust into the most prominent part of the head, and no endeavour need be made to find a suture. The after-coming head may be perforated through the occiput or through the roof of the mouth. The brain is washed away with a stream of sterilised water, and the craniotomy forceps applied. The smaller blade goes inside the skull, the larger over the face or occiput. The blades are screwed tight and traction made. It is well to keep a finger in the vagina while this is being done, as a piece of the cranium may be pulled away and laceration of the vagina may be caused by the jagged edges unless the accident is noted.—R. J. J.

LACHRYMAL GLAND DISEASE.

This rare affection when not due to malignant disease or syphilis, is caused by the admission of septic organisms which may cause acute suppuration of the gland requiring a free incision for the evacuation of pus. The indications for treatment are local applications for the relief of pain—Cocaine, leeching or hot fomentations; the pus usually finds its way into the lachrymal sac, with speedy relief of the swelling of the eyelids and all tension.

The writer has met with a hitherto unrecognised acute enlargement of the lachrymal gland which pushed the eyeball downwards and forwards, causing an alarming degree of lagophthalmos without any inflammatory action. The condition occurred in a male adult soon after an attack of weeping. The gland could be easily made out by its smooth outline and firm elastic feel. Resolution suddenly set in after about 6 weeks without any treatment, and in a few days the tumour entirely disappeared. He has observed a somewhat similar condition of the salivary glands supervene in a physician who had placed a hypodermic tablet of Pilocarpine under the tongue, great enlargement of the salivary glands setting in on the day following. The sudden resolution in each case pointed to some temporary obstruction of the duct which spontaneously yielded.

Mikulicz's Disease is a rare chronic inflammatory enlargement of both lachrymal and the salivary glands on each side of the body, and yields to Iodides in full doses with Arsenic, and also to X-ray treatment.

The treatment of Dacryocystitis or inflammation of the lachrymal sac and of the deformities which arise from stricture of the nasal duct are dealt with in the article on Epiphora.

LARYNGISMUS STRIDULUS.

Between the intermittent attacks of spasm of the glottis the primary cause—rickets, infantile convulsions, status lymphaticus, tetany, &c.—should be treated.

If seen during the attack, which is seldom, as the onset is alarmingly sudden and its duration exceedingly brief, the best thing to do is to dash a little cold water against the face and chest, or to apply a hot fomentation to the neck and draw the chin forwards, and afterwards plunge the patient into a warm bath. A whiff of Chloroform may be administered. Faradisation of the recurrent laryngeal or the forcible pulling forwards of the tongue may be resorted to if the physician should happen to be present at an attack which does not yield to a dash of cold water. Ammonia or Amyl Nitrite to the nostrils may also be tried. There is generally no time for the action of an emetic, unless in those cases where successions of attacks follow each other. Artificial respiration should be tried and persevered with in every case which does not yield to the above agents. Seldom is tracheotomy indicated.

Bromides, Chloral, Musk, Morphia, Emetics, Nitroglycerin, Succus Conii, and Belladonna internally have been recommended in recurring cases. The writer has obtained the best results from full doses of the Bromide of Ammonium, of which 2 or 3 grs. may be given every 3 hours or oftener to a child 1 year old, with $\frac{1}{2}$ gr. Chloral Hydrate. Henoch speaks highly of Morphia, pushed to the extent of causing drowsiness, but this treatment cannot be free from serious dangers, especially as the disease rarely, if ever, occurs except between the fourth and twenty-fourth month. Lancing of the gums may be tried, but there is little benefit to be expected. Antipyrine in small doses (1 gr. every hour for a child 1 year old) has been reported as successful in preventing the return of the paroxysms; Watkins administers $\frac{1}{5}$ drop of Tincture of Iodine every $\frac{1}{4}$ hour at first, and then every 1, 2, or 3 hours, but as a rule treatment directed to the rachitic condition meets all requirements.

LARYNGITIS.

Acute catarrhal laryngitis demands rest for the larynx and absolute rest if possible. The patient after swallowing a brisk saline or mercurial purge should be put to bed in a warm room (65° F.), the air of which is kept moist by the vapour of hot water from an ordinary bronchitis kettle or steam spray. Compound Tincture of Benzoin, Hemlock Juice, or a small quantity of Carbolic Acid should be added to the boiling water or to the water in the spray apparatus, so that the atmosphere in the neigh-

bourhood of the patient's bed may be made to contain a small percentage of the volatile ingredients.

A mild Mustard poultice, warm fomentation, or Spongio-Piline wrung out of warm Carbolic Lotion or hot water, should be applied to the larynx—the latter is the most convenient and soothing. Cold may be tried where warmth is found to aggravate, and freezing the skin over the thyroid space where the internal laryngeal nerve enters sometimes cuts short the attack. Warm demulcent drinks should be freely administered and perspiration encouraged. The following mixture for an adult is suitable :

℞. *Liquor. Ammon. Acetatis* ʒij.
 Vini Antimonialis ʒvj.
 Spt. Ætheris Nitrosi ʒj.
 Succi Conii ʒj.
 Aquæ Camphoræ ad ʒx. *Misce.*

Fiat mistura. Capiat cochlearium magnum quartis horis.

In the case of children an emetic of Ipecac. and the remedies mentioned under Croup should be administered.

Where pain and any degree of dyspnœa are present the soothing effects of the warm moist atmosphere may be intensified by causing the patient to hold his head over a basin of hot water to which the Friar's Balsam, Conium juice or Carbolic Acid has been added, a sheet being loosely applied so as to confine the concentrated vapour within the temporary tent so formed about his head and neck. This method is more reliable than the use of fancy inhalers, which must be placed close to the patient's mouth.

All ordinary indications are usually met by the use of a hand-spray apparatus into which the following liquid should be put :

℞. *Acidi Carbolic* ʒj.
 Glycerini Boracis ʒiv.
 Aquæ Rosæ ad ʒxij. *Misce.*

It is unnecessary and undesirable to place the nozzle of the spray inside the patient's mouth ; it should be held a few inches from his face, and he should be directed to inspire deeply during the spraying process, which need only last for a few minutes at a time at hourly intervals. A 5 per cent. Menthol solution in liquid paraffin or paroleine used in an atomiser is also very soothing. Rarely are scarifications or caustic applications to the interior of the larynx ever justified.

Acute œdematous laryngitis demands the promptest and most energetic treatment. The patient must be surrounded by a

warm atmosphere saturated with steam. The opening of the larynx should be freely scarified after cocainisation by a sharp-pointed curved bistoury, and if immediate relief be not obtained intubation should be performed or tracheotomy resorted to without delay.

A spray consisting of 1 in 2,500 Adrenalin when employed early may obviate operative interference; 5 to 10 per cent. Cocaine can be advantageously combined with it, and the danger of laryngeal spasm may be minimised by a rectal dose of 2 or 3 drs. Bromide of Sodium. As soon as active catarrhal symptoms have been combated by the above soothing remedies the patient should use a spray of 2 per cent. Tannic Acid before leaving his room.

Chronic catarrhal laryngitis shows itself mainly in impairment of the voice and hoarseness. The treatment in the first instance should be directed to the primary cause, and as this is nearly always due to excessive use of the vocal cords in public speaking or singing vocal rest is essential.

Though every constitutional disturbance or error is to be corrected by improved hygienic surroundings, including change of residence for a time to a bracing or mild atmosphere, nevertheless the most striking results are always to be obtained by local remedies when at the same time restriction is placed upon the use of the voice and tobacco and alcohol are abandoned.

Nitrate of Silver in solution (30 to 60 grs. to 1 oz.) should be applied to the interior of the larynx every 2 or 3 days. This is a very severe and painful remedy. Often a weak solution (20 grs. to 1 oz.) brushed daily over the interior of the larynx gives better results than the stronger solutions, which can only be used at considerable intervals. Chloride of Zinc (3 grs. to 1 dr.) is the best remedy when a purely astringent effect is desired.

Where the cords are thickened a 40 per cent. Lactic Acid Solution may be used, and it may be necessary to excise a portion of the hypertrophied tissue in the inter-arytenoid space. Singer's nodules may be excised, but as they are usually due to faulty voice production the best plan to pursue is to correct this after a prolonged rest to the larynx.

Strong local applications can only be made by the surgeon—a serious drawback in the treatment and management of a chronic disorder—and hence the great value of sprays and inhalations, which can be used by the patient as often as deemed desirable.

Of the astringent spray solutions the following are the best: Alum (5 grs. to 1 oz.), Tannic Acid (5 grs. to 1 oz.), Perchloride of Iron (5 to 10 mins. of the weak liquor to 1 oz.), Sulphate of Zinc (2 grs. to 1 oz.), Sulphate of Copper (1 gr. to 2 oz.), and when an alterative effect is desired Tincture of Iodine (5 mins. to 1 oz.), Chloride of Ammonium (10 grs. to 1 oz.). Bromide of Ammonium (5 grs. to 1 oz.), Eucalyptus Oil (2 mins. to 1 oz.), Fir-wool Oil (2 mins. to 1 oz.), Perchloride of Mercury ($\frac{1}{8}$ gr. to

1 oz.), Ipecacuanha Wine (100 mins. to 1 oz.), Sulphurous Acid ($\frac{1}{2}$ dr. to 1 oz.), may be employed.

In subacute cases where dysphagia, pain, and irritable cough are distressing, the spray which the writer has found most useful is that formulated upon a previous page, containing Carbolic Acid and Borax: Cocaine is often prescribed, but it tends to keep up the disorder if persisted in. Menthol, 5 per cent. in paroline, is much better where cocaine or a markedly local analgesic effect is desired.

Inhalations are useful when a soothing effect is desired, though other actions may be obtained by using various volatile substances in this form. Conium inhalation, hot water containing Eucalyptus, Terebene, Fir-wool Oil, Creosote, Menthol, Carbolic Acid, Iodine, Benzoin or Friar's Balsam, may be each advantageously used as an inhalation. Good results may be obtained from the Chloride of Ammonium Inhaler. Pinus Pumilio Oil, 15 mins. to 1 pint water at 160° F., is a grateful inhalation.

Insufflations employed by blowing finely pulverised substances, such as mixtures of powdered Starch, Bismuth, and Morphia, are seldom followed by much relief.

The constant current, Faradisation, or static electricity may be tried with benefit in some cases of chronic laryngitis, and Cathcart attaches great value to the use of the electric vibrator combined with massage of the neck.

Inveterate or rebellious cases must be sent to a warm, equable, dry climate like that of Egypt. Mont Dore, Ems, and Aix-les-Bains have gained considerable repute, and Braemar at home suits many victims suffering from the effects of vocal strain.

Gouty and *rheumatic laryngitis* are often very intractable, and only yield when the underlying diatheses are vigorously attacked by Salicylates, Aspirin, Colchicum and Iodides combined with rest to the larynx and the use of local sprays and astringent applications. In most instances eliminatory treatment at a spa will be advisable.

Membranous laryngitis may be accepted as synonymous with diphtheritic laryngitis, the treatment of which is dealt with under Diphtheria.

Tuberculous laryngitis in the great majority of cases is secondary to tuberculosis of the lung, but this fact should not deter the physician from attempting to relieve and if possible to effect a cure of the laryngeal lesion in all cases where the pulmonary mischief is limited and not actively progressive.

Constitutional treatment is of great importance in all cases, and must be conducted upon the same lines as in other forms of tuberculosis. Open-air life is essential, and except in very rare cases the laryngeal condition is not a barrier to sanatorium treatment. The most liberal and highly nutritious diet should be prescribed. A difficulty in swallowing should not if possible be permitted to limit the amount of food, and resort to the soft

rubber œsophageal tube may be justified when the dysphagia cannot be overcome by the use of anodyne or soothing sprays and other local methods of treatment.

Thick liquids or semi-solids as a rule are more easily swallowed than fluids, and Barwell recommends finely minced raw beef free from all fat and gristle mixed with egg-yolk. Often the patient can be got to follow Wolfenden's plan of lying upon his face on a sofa with his head hanging over the side, in which position he can suck up milk or thick soup through a glass or rubber tube from a vessel placed just below the level of his mouth. Sometimes dysphagia disappears whilst a bolus is being gulped down when a nurse standing behind the sitting patient presses firmly with each of her hands upon the side of the larynx.

Cod-liver Oil and Creosote, Guaiacol or Hetol internally are always beneficial. Vaccine treatment by Tuberculin injections should be tried when the opsonic indications warrant this method, but it must be confessed that less is to be expected from it than in other forms of localised tuberculosis.

Local Treatment.—The most important factor in all cases is rest to the larynx, and this should be when possible absolute if ulceration of the cords has occurred, the patient being forbidden to speak except in a low whisper. In early cases where the lesion consists of a diffuse inflammatory swelling without breach of surface, laryngeal rest with the above-mentioned measures may effect a complete resolution without resorting to surgical methods when soothing sprays are judiciously employed to relieve the catarrhal symptoms.

The method of Bier, which consists in the establishment of a passive hyperæmia, has been recently adapted to the larynx by employing a Kuhn's mask in order to cause a negative thoracic pressure through partial obstruction of the inspiratory current passing via the nasal route.

Pain, cough and dysphagia may be relieved by the inhalation of Creosote, Menthol, Thymol and other local sedatives. In mild cases the continuous use of the common perforated zinc mask in which a few drops of a solution of creosote or menthol in spirit are sprinkled on a little cotton-wool meets all requirements, or the following formula may be used :

R. *Creosoti Purif.* ʒj.
 Acid. Carbolic. ʒij.
 Spt. Chloroformi ʒij.
 Thymol gr. xxx.
 Aquæ Destill. ʒxv.
 Spirit. Vini Rect. ad ʒiv. *Misce.*

Fiat solutio secundum artem.

Reflex cough may sometimes be prevented by sucking the B.P. Carbolic lozenge or painting the upper part of the larynx with Cocaine or Menthol solution. Some patients by the use of these remedies immediately before food are enabled to swallow without pain. The best routine method of employing menthol is to use a 10 to 15 grs. per ounce solution in liquid paraffin sprayed by means of the atomiser. A (1 in 10) solution in olive oil may be used as a paint, and the strength may be doubled or trebled after a time when pain or dysphagia is very severe. Cocaine should be reserved for the worst cases, and an aqueous spray of 5 to 10 per cent. must be used with caution by a trained nurse a few minutes before meals. Dundas Grant relieves dysphagia by injecting Alcohol into the superior laryngeal nerve (2 grs. eucaïne β to 1 oz. 80 per cent. alcohol).

Insufflations may be employed by Leduc's auto-insufflator, and the best agent for use in this manner is Orthoform, 10 grs. of which may be diffused over the ulcerated surface before attempting to swallow. Iodoform, Boric Acid, Bismuth, Iodol, Aristol, Chinosol, Resorcin, Thiocol and the innumerable host of iodoform substitutes and many other antiseptic drugs have been employed as insufflations, but orthoform is the best of all, though its analgesic properties are nil unless when applied to a breach of surface. Cocaine should never be employed in this manner, and the use of morphia or codeine is irrational.

As a preliminary to all local applications or surgical procedures, an aqueous spray of Carbolic Acid (1 in 100) or of Borax or Sodium Bicarbonate (5 grs. to 1 oz.) is advisable for cleansing purposes. Simple inhalations of steam act in the same way, and are soothing when the distress arises from a diffused catarrhal state.

Intratracheal injections are indicated where cough is incessant and a dry state of the laryngeal mucosa exists with ulceration; by their use the sputum is sterilised and the laryngeal ulcers are shielded from irritation by the currents of air passing over them in coughing and breathing. The most suitable for all purposes is the daily injection through the laryngeal aperture of 4 drs. of a warm solution of Menthol in liquid paraffin (20 per cent.) as the patient is made to take a slow and full inspiration after cocainisation; 2 per cent. Guaiacol, Creolin, Izal, Naphthalene and Eucalyptol, and a 1 per cent. Oil of Cinnamon are also employed.

Submucous injections of a few minims of a solution of the above substances or of 0.1 per cent. Perchloride of Mercury, 60 per cent. Lactic Acid, Acid Phosphate of Calcium, &c., are now seldom employed, and can only be recommended in very exceptional cases under the skill of an experienced operator.

More radical surgical procedures are, however, clearly indicated when the ulcerating process fails to respond to rest of the larynx, soothing and antiseptic applications and intratracheal injections employed every 24 to 48 hours.

The laryngeal surface having been brushed with a solution of cocaine 15 per cent. applied on cotton-wool firmly fixed upon a suitable holder, the ulcerated spot should be curetted carefully and thoroughly and the raw surface rubbed with a 60 to 75 per cent. Lactic Acid.

Many surgeons, however, content themselves with a thorough application of the pure acid without previous curetting, since this substance has marked penetrative power and effects the destruction of all diseased cells without injury to the healthy elements in the mucosa. Formalin is employed in a similar manner (5 to 10 per cent.), and strong Carbolic Acid is sometimes used.

Barwell's caustic pigment consists of 50 per cent. Lactic Acid, 7 per cent. Formalin and 10 per cent. Carbolic Acid, and he insists upon the importance of its being well rubbed in. Protargol and other silver salts are also employed.

Various types of cutting or punch forceps are used for excision of the ulcerated spot instead of curetting. Many laryngologists prefer the galvano-cautery. This may be employed for the removal of ulcerating tissue or it may be used for the destruction of tissue before abrasion has occurred, in which case the method of procedure is to make one or two deep punctures into the indurated spot.

The promiscuous or routine method of swabbing the laryngeal surface with strong lactic acid which followed its introduction by Heryng has given way to the more restricted employment of the drug in selected cases where the diseased process is circumscribed and the lung lesion is limited and non-progressive.

When the disease is limited to the upper part of the epiglottis the best procedure is to excise it by means of the punch forceps. Barwell removes the entire organ in one piece by large cutting forceps, having previously been in the habit of employing the galvano-cautery.

The operation of thyrotomy is practically never justified, and tracheotomy or laryngotomy is reserved for those cases where urgent dyspnoea immediately threatens to cut short the life of the patient.

Perichondrial abscess will require prompt incision from without, and though excision of the larynx is seldom if ever permissible, it may be found necessary to remove a portion of the diseased cartilage.

Syphilitic Laryngitis.—The treatment should consist of constitutional remedies suitable to the stage in which the syphilitic affection is existing at the time. In the later part of the *secondary* stage of syphilis rapid mercurialisation should be carried out by inunction of Mercurial Ointment. Laryngeal mischief occurring during the *tertiary* stage of the disease is best met by vocal rest, perfect hygiene, nutritious food and heroic doses of Iodide of Potassium—30 grs. three times a day after meals. When the case does not respond to the iodide, and the symptoms increase

in gravity, a course of mercurial inunction may be cautiously tried. The local symptoms can be best met by the various anodyne and astringent sprays and inhalations previously mentioned. A weak solution of Corrosive Sublimate ($\frac{1}{2}$ gr. to 1 oz.) is the best spray to use in such cases.

Iodol, Orthoform, Iodoform and the newer iodoform substitutes may be employed by insufflation, and are of the greatest use in many cases where much ulceration exists. In the late stages of the disease Menthol or Cocaine may enable the starving patient to swallow with comfort.

Argyrol, Nitrate of Silver, (1 dr. to 1 oz.) or the solid stick may be freely applied to ulcerations, or a solution of Corrosive Sublimate (5 grs. to 1 oz.) may be used, with the aid of the laryngeal mirror. Sulphate of Copper (15 to 20 grs. to 1 oz.) is a local remedy of much value.

The presence of œdema or gummatous infiltration with sprouting vegetations may at any time demand tracheotomy, and some laryngologists resort to this in order to secure absolute rest to the larynx in intractable cases. Before, however, deciding to open the trachea or larynx it will be well to attempt curetting or excision and the application of Perchloride of Mercury solution. The cautery must be used with caution, as the danger of a permanent stenosis of the larynx must be always kept in mind.

The treatment of *chronic laryngeal stenosis* consists in the daily introduction of a Schroetter's dilator passed into the cocainised larynx through the vocal cords after incision of any webs of cicatricial tissue. The dilating tube will soon be tolerated in the stricture for half an hour at a time. O'Dwyer's tubes may be advantageously employed and worn for a month. When these measures fail tracheotomy should be performed, and the stenosis dilated from the inside or by means of instruments introduced through the tracheotomy wound.

LEAD POISONING—see Colic, Plumbism, and Poisoning.

LENTIGO OR FRECKLES—see Chloasma.

LEPROSY.

The discovery of the leprosy bacillus raised hopes of a cure being discovered for this fell disease, but up to the present no such hope has been realised, and it cannot be yet stated that any known drug possesses a specific or curative action on the malady. Nevertheless much can be done to stay its progress and make the life of the leper tolerable. In a few cases complete resolution has been known to occur, but the cure has obviously been either spontaneous or has been the result of agents which have acted by increasing the natural resistance of the tissues to the bacillus in mild forms of the disease. There appears justification for the hope that Ehrlich's new drug ("606") may prove an agent of some value.

Preventive measures have succeeded in stamping out the disease in various localities. These should consist in rigid isolation of all lepers and the separation of children from their leprous parents, and, as recommended by the last International Congress on Leprosy, the leper should be excluded from occupations which allow of transmission of the disease, as this is decidedly contagious. Chundra strongly urges segregation laws for Bengal.

By the judicious and persistent use of certain remedial agents the disease may be retarded, and suffering may to a very considerable extent be alleviated. Good food, moderate exercise, free ventilation, and as much pure open air as the patient's surroundings will permit, may be indulged in to advantage. Agents which improve nutrition, as tonics and Cod-Liver Oil, are always useful. Iron, Arsenic, Iodine, Phosphorus, Salicylates, Salol, Hoang Nan, Red Mangrove, Cashew Nut and Cowti Oils, Tuberculin, Chlorate of Potassium, Thyroid Gland, Mercury in minute doses, and a long list of vegetable substances, about whose physiological action nothing whatever is known, have been tried in vain.

Of empiric agents there are two which have met with results which warrant their recommendation as valuable palliatives. Some affirm that in mild cases they are curative, but the cases of leprosy which have been reported as cured by their use are not believed by some authorities to have been true examples of the disease. These agents are Gurjun Balsam or Oil, and Chaulmoogra Oil or its active principle—Gynocardic Acid. Both remedies are applied externally and taken internally at the same time. Both are as repulsive as copaiba, and as liable to upset the stomach.

Gynocardic Acid in doses of 2 grs. may be given in the form of pills after each meal, and the Chaulmoogra Oil may be administered in the form of capsules (10 mins. in each), two 3 times a day, or as an emulsion or mixed with fresh cream. The dose should be gradually increased till the patient can bear no further addition, after which the maximum amount may be persisted in as long as the patient remains able to swallow it without suffering diarrhoea or vomiting. 100 mins. daily may often be administered without much gastric disarrangement. 4 drs. daily by the rectum may be employed when the stomach rebels, or it may be given hypodermically, but the long period (several years) during which its use must be persisted in prohibits the hypodermic method. Bayer's Antileprol prepared from the oil is less irritating to the stomach, and may be given in 15-min. capsules.

The oil should also be freely and forcibly rubbed into the affected regions after being diluted with twice as much pure lard, or with an equal amount of lime water in an emulsion. The friction should be repeated several times a day for 15 or 30 minutes each time, and a cloth or dressing saturated with the ointment should be left in contact with the diseased surfaces. From the beginning of the treatment the skin should never be permitted to get free from this greasy application, except for the

short time during which the patient is getting cleansed from time to time by hot baths, after which the frictions are to be immediately resumed.

Gurjun Balsam, Wood Oil, or Dipterocarpus Balsam as it is also called, is likewise used both externally and internally, and some Indian physicians prefer it to the chaulmoogra oil. It may be given in the form of an emulsion in doses of 15 to 30 mins., or in capsules. In India a tablespoonful of an emulsion made by shaking up 2 oz. of the oil with 6 oz. Lime Water is given twice a day.

Nastin, a crystallisable fat obtained from the leprosy bacillus or from *Streptothrix leproides*, has been employed by Deycke hypodermically, who found that it attacked the leprosy bacillus which disintegrated, an active reaction taking place similar to that which tuberculin produces in phthisis. By combining it with a 2 per cent. solution of Benzoyl Chloride the preparation known as Nastin B is obtained, which is injected into the subcutaneous fatty tissue in doses of 15 mins.

Collargol intravenously and the newer Arsenical preparations hypodermically are being tried.

Ulcerations are to be treated upon general surgical principles. Ichthyol and Resorcin Ointments (25 per cent.) are good dressings to use after applying concentrated Carbolic Acid where the ulcerated surface is limited. Iodoform gauze may be employed in some cases, but Oakum teased out carefully may make a cheap and very valuable dressing superior to all others where expense is an important object. Morris uses an ointment consisting of 30 grs. Mercury Oleate, 30 grs. Ichthyol, and 20 grs. Salicylic Acid to 1 oz. Vaseline.

Unna regards the disease as curable, and employs warm iron-ink baths to act upon the fatty substance secreted by the bacilli; he recommends an ointment containing Salicylic Acid 2, Ichthyol 5, Pyrogallol 5, and fatty basis 88 parts, and he gives Ichthyol internally, and advises excision of the tubercles and the use of Chrysophanic Acid where the skin lesions are in the early stage.

Nearly every known antiseptic and germ destroyer has been employed, and of recent years the X rays have been extolled and some cures reported after their prolonged use, and Radium emanations are also being employed with hopeful results in mild cases. Nerve stretching has been advantageously employed for the relief of anæsthesia in non-tubercular leprosy.

Serum therapy and vaccine treatment have given no definitely satisfactory results. All that can be hoped at present from the use of remedies is best obtainable by strenuous use of Chaulmoogra Oil internally and locally for a period extending over several years.

LEUCODERMIA OR VITILIGO.

Treatment is unsuccessful in removing the anomalous distribution of the skin pigment in this disfiguring condition. An attempt may be made to diminish the dark coloration sur-

rounding the white patches by applying a strong solution of Permanganate of Potash followed by Oxalic Acid solution, or by bleaching with Peroxide of Hydrogen or by the local use of Mercury Perchloride. To cause a deposit of pigment in the white patches, blistering with Cantharides may be tried. A cosmetic effect may be kept up by painting the white areas with Walnut Juice daily in order to mask the marked contrast between their colour and that of the surrounding pigmentation.

W. Evans maintains that the pathology of the affection is not due to local nerve lesion, but is the result of a toxæmia originating in the intestinal tract, and he recommends as the only useful treatment the disinfection of the alimentary canal.

LEUCOPLAKIA—see under *Tongue Diseases*.

LEUCORRHŒA.

The term "leucorrhœa," or "whites," is often applied indiscriminately to every form of vaginal discharge not sanguineous in character. A little observation shows that these discharges fall naturally into the following groups, differing markedly in ætiology and treatment:

1. A *true leucorrhœa*, or white discharge, varying in consistence from a thin milky fluid to curdy semi-solid masses, and consisting mainly of shed epithelial cells from the vagina in a watery albuminous medium. This is found often in anæmic young women living amid poor hygienic surroundings, and should be combated by better hygiene as regards food, fresh air, clothing and rest, and by drugs directed to the relief of anæmia. Local measures should be avoided if possible, but if the discharge persists in spite of general treatment a vaginal douche should be given. It is well to get a nurse to show the patient how to use the douche, which should be of the fountain type with a strong glass nozzle. 2 to 4 quarts of warm saline solution (drachm to the pint) may be used every evening before retiring to bed. If this is ineffectual the following may be tried: Boric Acid or Borax (dr. j. to O. j.), Zinc Sulphate (dr. j. to O. ij.), Tr. Iodi. (m. xxx. to O. j.), Cupri Sulph. (gr. x. to O. j.). The practitioner should be on the watch for evidence of threadworms which may be present, and the possibility of masturbation should not be lost sight of. A very soothing and useful form of douche in all cases of vaginal discharge is the following:

R. *Ol. Menth. Pip.* ʒiss.
Acid. Carbol. ʒiij.
Alum. Pulv. ʒj.
Acid. Boracici ʒiv. *M. ft. pulv.*

Signa.—"A teaspoonful in a quart of hot water to be used as a douche."

A curdy white discharge associated with intolerable itch is found sometimes in pregnant women. It may be treated by douches as suggested above. Again, a thin milky secretion is found in some women at the time of the menopause, and is due to the condition of atrophy of the vaginal mucous membrane associated with superficial loss of epithelium, known as "senile vaginitis." This condition may also be treated by douches, and if intractable by painting the reddened patches through a speculum with Nitrate of Silver solution (gr. xx. to ʒj.), or with pure Phenol.

2. A *sero-purulent* discharge, yellowish or greenish in colour, and consisting of an albuminous fluid containing numerous leucocytes and shed epithelial cells. This discharge is usually produced by the gonococcus, often accompanied by a secondary infection with staphylococci or streptococci (for the treatment see under Gonorrhœa). A purulent discharge may also be found in patients who are wearing a pessary with neglect of the usual precautions to insure cleanliness, or who have become infected through the introduction of septic matter in the course of an examination or operation. Such a discharge usually disappears on the removal of the pessary, and the institution of regular douches. If persistent, swabbing with the Nitrate of Silver solution just mentioned will quickly cure it.

3. A *watery or serous* discharge, often foul-smelling and stained blackish or brownish. Such a discharge is very suspicious, and instant measures should be taken to ascertain whether the patient is suffering from cancer of the cervix or body of the uterus. A similar discharge is sometimes noted in the case of a sloughing fibroid. The treatment is, of course, the removal of the tumour causing the discharge (see under Cancer of Uterus and Uterine Fibroids).

4. A *clear mucoid* discharge like white of egg. This is almost pathognomonic of the condition commonly known as "erosion of the cervix." The treatment is the removal of the erosion by cauterisation, or better by shaving off the affected part as described under Dysmenorrhœa.

5. A *mucopurulent* discharge, consisting of stringy mucus, yellowish or whitish in colour. This is pathognomonic of inflammation of the cervical or uterine mucous membrane. The treatment is that of the inflammation (see under Endometritis, p. 291).

—R. J. J.

LEUKÆMIA.

The treatment of leukæmia, leuchæmia or leucocythemia, whether of the splenic, bone-marrow, or lymphatic types, still continues to be most unsatisfactory, and must remain so until its pathology has been discovered.

Perfect hygiene, with rest of body and mind, an easily digested dietary and open-air life when possible should be instituted. In

the acute lymphatic form occurring in children, which often proves fatal in a few weeks, absolute rest in bed is essential, and the same rule applies to all acute cases in the adult which are probably of myelogenous type.

Of internal remedies the only drug which appears to possess any beneficial action is Arsenic. In the chronic splenic or spleno-medullary type of the disease life may be prolonged by its judicious administration, but in the acute forms of the affection little benefit must be expected from any known method of treatment. Arsenic should be given in gradually increasing quantities till the maximum amount tolerated by the patient is reached. 5 mins. Fowler's solution thrice daily immediately after meals should be commenced, and after a few days the dose may be steadily increased till 15 mins. are reached. Occasionally, but not often, the addition of a small amount of Iron is beneficial and, as in pernicious anæmia, the arsenic course should not exceed a period of 4 to 6 weeks at a time.

Cacodylate of Sodium hypodermically often gives better results and should always be resorted to when the stomach is irritable; it may be given in 1-gr. doses by the rectum daily. The cacodylate course in $\frac{3}{4}$ -gr. daily doses should not be continued for more than 10 days, to be renewed again after an interval of a week. The drug may also be administered in keratin-covered pills, each containing $\frac{1}{4}$ gr. to be given thrice daily. The more recent arsenical organic compounds, as Arsamin, &c., have been employed, but their use is not free from dangerous optic-nerve impairment and peripheral neuritic changes.

X-ray treatment of late years has proved unmistakably most beneficial in cases especially of the chronic myelogenous or spleno-medullary type. The acute lymphatic form of the disease should not be submitted to the Röntgen rays. Under the use of this agent the spleen has been found to rapidly decrease in size, and sometimes even to become impalpable, and the liver also is diminished in bulk. The *modus operandi* of the rays is difficult of explanation, but it has been proved that under their action some substance is formed in the blood which possesses the power of destroying the different varieties of white cells (except the lymphocytes) in the circulating fluid. In the acute cases, and especially in the acute lymphatic cases, severe toxæmia may result. The rays may be applied to the splenic area when this organ is manifestly enlarged. The best method of exposure, however, is that suggested by Pancoast, in which eight or ten bone-marrow regions of the body are submitted systematically, one after the other, to the influence of the rays for a few minutes at a time every three days, dermatitis being carefully avoided. The blood during the X-ray treatment shows remarkable changes, all the granular types of leucocytes and the myelocyte cells disappear, the lymphocytes alone remaining as before, and the red discs increase in number. It must, however, be accepted that this

treatment, like the arsenical, is but palliative and not in the strict sense curative, though results in mild cases have been sometimes obtained which would apparently warrant the statement that the disease was cured; such cases, however, generally relapse, and the rays afterwards cease to have any good effect upon the blood or spleen. Radium emanations are also being tried with hopeful results.

Quinine in large doses, with the view of causing diminution in the size of the splenic tumour, has been abandoned in favour of the X rays and the same may be said of ergot, electricity, cold douching, phosphorus, oxygen inhalations, thyroid feeding, bone-marrow, spleen pulp and the host of empirical agents formerly employed.

The tendency to hæmorrhages can be much lessened by the administration of Chloride or Lactate of Calcium, which increases the coagulable power of the blood. The complications which arise, such as syncope, fever, peritonitis, pleuritis with effusion, dyspnœa, anasarca, &c., are to be treated upon the general principles detailed under the head of each condition. Removal of the spleen is certainly inadmissible, death being certain to be hastened by it.

LICHEN.

The treatment of the group of skin affections formerly dumped under the name of "Lichen" is simplified by the advances made in cutaneous pathology which have resulted in a more scientific classification.

Thus *Lichen urticatus* being a variety of urticaria, its treatment will be that of the primary type of disease. *L. simplex* being but the papular stage of impetigo or eczema, and *L. circumscriptus*, *L. circinatus*, or *L. serpiginosus* being a variety of seborrhœa, these conditions yield to the remedies indicated by the underlying affection. *L. pilaris* is a variety of keratosis affecting the upper part of the follicles, and *L. spinulosus* is almost certainly of the same nature, and will yield to the treatment detailed under Keratosis and Ichthyosis. *L. tropicus* is prickly heat or miliaria rubra allied to strophulus or red gum, the treatment of which will be detailed under their own headings. *L. hæmorrhagicus* and *L. lividus* are the result of minute hæmorrhages into the region of the hair follicles which yield to the remedies indicated by the blood condition—viz., purpura. There remain after the elimination of the above, two cutaneous affections to which the name Lichen should be restricted—viz., *L. planus* and *L. scrofulosorum*.

The treatment of *L. planus* is always tedious and often unsatisfactory; improved hygiene, regular hours of work, rest and sleep and dieting must be insisted upon. Mental overwork and a neurotic strain being found in a considerable percentage of cases, it is obvious that the intense pruritus must be relieved at night otherwise a severe form of insomnia develops.

Internal treatment should never be omitted. Arsenic holds the first place as in the treatment of psoriasis, and it must be given in full doses for some months, with periodical breaks in the course of about a fortnight each. Fowler's solution by the mouth is safer than hypodermic medication with the organic arsenic compounds. In acute cases Tartarised Antimony should be administered, and when this agent fails in making a distinct impression upon the eruption of flattened purplish-red papules Mercury in the form of $\frac{1}{10}$ -gr. doses of the perchloride or biniodide should be tried, but salivation must be avoided. Phosphorus has also some power, but its best effects may be procured by $\frac{1}{30}$ -gr. doses given in the intervals during which arsenic is being suspended.

Local treatment consists in Alkaline Baths and the use of Tar preparations to relieve the severe itching. When the eruption is extensive the best application is one like the following :

R. *Liq. Carb. Detergens* ʒij.
Liq. Plumbi Fort. ʒij.
Aquæ Destillatæ ʒxxx. *Misce.*

By substituting Bicarbonate of Sodium for the lead in the above the lotion may be freely employed for long periods without the possibility of harm.

Chronic cases must be treated by stronger preparations, and the formulæ for tarry ointments are numberless ; one of the best is that found so suitable in scaly eczema, consisting of 2 drs. of *Liq. Carb. Deterg.*, 20 grs. *Hyd. Ammon. Chlor.*, and 2 oz. *Lanolin*. Unna prefers Carbolic Acid to tar, and his lichen ointment consists of 30 mins. Carbolic Acid, 4 grs. Corrosive Sublimate, and 2 oz. Zinc Ointment, the different ingredients being increased or diminished according to the requirements of each case. Thus for an old but *small* indurated patch he has increased the perchloride to the strength of 10 or even 20 grs. per oz., but such an ointment would be highly dangerous if applied to any considerable area of the skin.

Salicylic Acid Ointment, 1 part to 20 of lard, may be applied in chronic cases, and Pyrogallic Acid or Chrysarobin can be used of the same strength when the lesion is limited in extent and of long standing. A good effect in the latter class of case may be obtained by covering the indurated patch with Soft Soap or with *Emp. Hydrargyri* or *Emp. Salicylici*. Some dermatologists do not hesitate to destroy small horny areas with the galvanocautery. X rays have proved most valuable in the treatment of old indurated patches, and are more efficacious than the cautery.

Some rare acute forms of lichen, in which the papules are sharp-pointed from involvement of the hair follicle as in Hebra's *Lichen ruber acuminatus* and Unna's *L. neuroticus*, are liable to end fatally, and should only be treated by soothing applications of Olive or Carron Oil. Some chronic neurotic types only respond to hydro-

pathic treatment by Jacquet's method of forcibly projecting a douche of warm water (98° F.) against the skin on each side of the spine, followed up by a dash of cold water, and Fordyce has obtained good results from a course of sea-water baths. *L. scrofulosorum* is believed to be always of tuberculous nature. The internal administration of Cod-Liver Oil, Creosote and Iodide of Iron with Arsenic should be combined with local applications of Salicylic Acid Ointment, 2 to 5 per cent., or Creosote Ointment (B.P.), and if these fail the X rays may be employed.

LIGHTNING AND ELECTRIC-CURRENT INJURIES.

Burns and local injuries to nerve-trunks are to be treated on general principles by appropriate dressings and at a later stage by massage, &c. The shock or collapse is to be met by the remedies already mentioned upon p. 177. Thus warmth and friction to the surface of the body with the hypodermic or rectal administration of diffusible stimulants such as Alcohol, Ether or Ammonia and the Cold and Hot Douche alternately. Artificial respiration must be resorted to in all cases where unconsciousness exists, and the operation should be persisted in for at least an hour or more should the slightest sign of returning animation show itself.

Great danger exists to the rescuer in electrical-current accidents in separating the victim from the live wire with which he is in contact. The hands must be enveloped in thick woollen gloves or other dry non-conducting media, and the live wire should be cut by a properly insulated apparatus.

LITTLE'S DISEASE.

The treatment of this form of spastic paraplegia which shows itself soon after birth has been practically regarded as beyond the reach of art, but the introduction of Spiller's operation of resecting the posterior roots of several of the spinal nerves has recently brought it within the group of organic nerve diseases capable of being alleviated considerably by surgical means (see under Paralysis, Spastic).

LIVER, Abscess of.

Pyæmic or multiple hepatic abscesses are beyond the reach of treatment.

Simple or tropical abscess of the liver is most commonly seen in this country amongst returned Anglo-Indians, and is regarded as a sequela of dysentery, though Havelock Charles has proved that the suppuration is very often independent of dysenteric infection.

Preventive treatment in Europeans suffering from dysentery consists in absolute rest in bed, a mild liquid diet and the use of Ipecac. in large doses to combat the organisms to whose presence the dysenteric symptoms are due. An important factor in all treatment is the cleansing of the alimentary canal by Saline

Purgatives. Rogers maintains that the hepatitis in its pre-suppurative stage may be effectively dealt with by large doses of Ipecac., which prevents abscess formation as soon as marked leucocytosis with little or no polynuclear increase has demonstrated its presence. Other authorities attach much value to Ammonium Chloride.

Simple aspiration succeeds in a small percentage of cases when pus has formed, but Manson's method is preferable in all deep abscesses. It consists in tapping with a full-sized trochar and canula and introducing through the canula a long rubber tube through which the pus is siphoned off after the withdrawal of the canula.

The danger of pus welling along the track of the aspirator needle and infecting the peritoneum is always a real one, hence most surgeons in superficial or deep abscesses recommend a free abdominal incision under strict antiseptic precautions; after the abdominal cavity has been carefully cut off by sterile gauze packing a large trochar is plunged into the abscess and the track of the puncture seared by the Paquelin cautery and the sac washed out through a rubber tube with warm Saline or weak Quinine Solution, the tube being kept in position for drainage by gauze packing. Or the liver may be sutured to the edges of the wound made in the parietal peritoneum. Recent statistics afford abundant evidence of the frequent subsequent septic infection of the abscess cavity, and the most stringent antiseptic precautions are necessary till healing has become completely established.

Where the abscess cannot be reached through the abdominal route the pleura must be opened, and it may be necessary to resect a portion of one or more ribs as in the operation for suppurating hydatids.

LIVER, Acute Atrophy of.

All attempts at curative treatment have hitherto failed in this rapidly fatal affection. Cases of reported cures are considered to be examples of mistaken diagnosis.

Life may be prolonged by a thorough flushing out of the intestinal tract by Saline Purgatives preceded by Calomel in small doses to disinfect the intestinal contents and to minimise or counteract the effects of any toxin generated within the bowel.

Intravenous injections of Saline or large amounts administered hypodermically in several areas, together with hot-packs to stimulate the sweat-glands as in uræmic conditions, may be tried when coma or stupor threatens.

LIVER, Amyloid Disease of.

The treatment of this affection is identical with that of amyloid disease of the kidney referred to under Bright's Disease. The primary cause should always be dealt with, and any focus of suppuration must be surgically treated unless the serious condi-

tion of the patient's health and the presence of some incurable malady prohibits operative procedures. Even after marked signs of amyloid degeneration have appeared in the kidney, liver and spleen, resolution may be expected if diseased bone can be removed or a chronic abscess can be obliterated by operation.

In phthisical cases with extensive cavities obviously little improvement can be expected, but remedies—Creosote internally and antiseptic inhalations, &c.—which diminish pus formation, will retard the progress of the amyloid process.

Iodide of Potassium in large doses for long periods should be given in syphilitic cases, and Iron Iodide is valuable when the anæmia is severe.

In such hopeless cases as those occurring during bronchiectasis, chronic empyema, &c., life may be prolonged by a residence in a dry, bracing, elevated region near the coast; a long sea voyage is sometimes beneficial or a sojourn at a spa where natural Iodine Waters may be freely used.

LIVER, Cancer of.

Treatment in most cases can only be palliative, and is to be carried out upon general principles. Thus pain is to be relieved by Opium, constipation by enemata or mild cathartics, vomiting by Ice, Morphia Perules ($\frac{1}{16}$ gr. each) and counter-irritation, and the collection of fluid in the peritoneal cavity must be removed by tapping when the symptoms become urgent.

As the neoplasm is seldom primary and not often seen till considerably advanced, operative procedures are rarely indicated. Many cases are now on record where small and circumscribed malignant deposits in the liver associated with gall-stones have been successfully removed during operations commenced for the relief of other symptoms. Anchütz has published a list of ninety-six operations for the removal of new growths in the liver, and the mortality attributable to the operation itself amounted to seventeen. For the various forms of treatment suitable to inoperable cancers, see under Cancer.

The frequency with which cancer of the gall-bladder is found associated with the presence of calculi in the viscus is a strong argument for operative procedures, especially since the total mortality in all gall-bladder operations has been reduced to below 5 per cent., and Mayo Robson has shown that the mortality of cholecystotomy when undertaken in the early stages of cholelithiasis is now under 1 per cent.

LIVER, Cirrhosis of.

In the majority of cases coming under the care of the physician a history of alcoholism in the form of spirit-drinking is obtainable, and if the disease is detected in the preliminary stage of enlargement a confident hope may be expressed that permanent cure will follow upon the removal of the exciting cause.

Alcohol in every form should be forbidden. Where it is found impossible to carry out this rule, the physician should insist upon whatever alcoholic liquor the patient indulges in being very largely diluted and taken after meals. The extent to which the disease may yield, even when established beyond doubt, is rather under-estimated. The writer has had considerable experience of it, especially amongst the male operatives in large linen manufactories, where a very common practice amongst the "hacklers" of flax is to drink undiluted whiskey before commencing their daily work in the early morning, previous to breakfast, in order to relieve the chronic bronchitis and emphysema which almost constantly result from the nature of their employment, which necessitates their being in an atmosphere of fine flax-dust. Where relief can be obtained by suitable bronchial remedies and the hackler or flax-dresser can be made to give up his dram-drinking, permanent improvement sets in in the cirrhotic liver.

Change of occupation is of vital importance in dealing with cirrhosis in publicans, barmen and waiters. It is almost impossible for such men to abstain once they have become enslaved to alcohol unless a new sphere of labour be opened up to them.

Active open-air exercise or labour is of great importance, and the diet should be plain and nutritious. Attention should be paid to the amount of liquids imbibed. Where there is as yet no sign of effusion into the peritoneal cavity a liberal allowance of liquid food is very desirable. Milk may be taken in large amount mixed with an equal quantity of aerated water, and the best diet is a liberal fish dinner and breakfast. A few months of vegetarian living often give excellent results. In Ireland buttermilk or the home-made Koumiss mentioned upon p. 18 affords a most valuable dietary. Yeo points out the importance of a diet consisting largely of milk mixed with an alkaline water like Vichy, Vals, or Apollinaris.

The bowels must be kept in the healthiest state possible. Purgatives are useful at all stages of cirrhosis, and saline cathartics as Epsom or Carlsbad Salts and the various purgative mineral waters are the best. Where the patient's means permit, a sojourn at Carlsbad, Vichy, Kissingen, or Marienbad is very valuable. By an occasional dose of Blue Pill given at bed-time, followed by a morning saline, the portal system is very powerfully influenced. Mercurials must be used with great caution where there is any renal mischief associated with the hepatic lesion. Podophyllin or Iridin may then be employed in such cases advantageously.

A full dose of any natural purgative water every morning with an occasional mercurial or podophyllin pill given the night before soon tells upon the hepatic enlargement and induration.

Mercury may also be given for about a month in small doses, alternating with large doses of Iodide of Potassium administered

for a similar period. This latter drug is of great value in syphilitic cases ; there seems little reason to doubt that syphilis and malaria may be the cause of cirrhosis in a small percentage of cases.

Every case of cirrhosis, whether in the stage of enlargement or hobnail contraction, where a distinct history of indulgence in concentrated distilled spirits is absent should get the benefit of a course of large doses of Iodides on the possibility of a syphilitic foundation being the primary factor in the disease, as insisted upon by W. B. Warrington.

For the cases in which malaria is suspected Quinine and Arsenic should be persisted in.

Murchison attached importance to the action of the Chloride of Ammonium and Green Iodide of Mercury in ordinary alcoholic cirrhosis ($\frac{1}{2}$ to 1 gr. three times a day). These remedies in the great majority of cases cannot be pushed with safety, especially as most of the victims of cirrhosis are suffering from gastric troubles. Many of them are debilitated from want of common food, having long since ceased to live with regularity and prudence. In such cases there is no remedy so frequently applicable as the Diluted Nitro-Hydrochloric Acid in full doses, combined with a vegetable bitter in small amount. It may, moreover, be given at the earliest, and is often grateful during the later stages of the disease. As this acid is liable to decomposition, it should be seen that the specimen be of moderate age, and that it has been carefully preserved in a stoppered bottle. The Nitro-Hydrochloric Acid bath is prepared by mixing 1 oz. of strong Nitric and 2 oz. of Hydrochloric Acid in 2 gallons of warm water. A local pack may be administered by soaking cloths in this mixture and applying them to the abdomen and lower part of the chest. The writer, however, prefers to apply the acid mixture in the above strength upon spongio-piline worn under a bandage over the entire hepatic region. As soon as any eruption appears the acid may be discontinued, but in some cases the mild counter-irritation produced by covering the acid lotion with an impervious tissue is productive of benefit.

The following is a good combination ; it acts directly upon the liver, and at the same time tends to relieve the craving for alcoholic stimulants :

R. *Acidi Nit.-Hyd. Dil.* \bar{z} ss.
 Succi Taraxaci \bar{z} ij.
 Tinct. Nuc. Vomicae \bar{z} v.
 Extract. Cinchonæ Liq. \bar{z} iiiss.
 Infus. Chiratae ad \bar{z} xij. *Misce.*

Fiat mistura. Signa.—"A tablespoonful in a wineglassful of water to be taken four times a day before food."

In a few cases the Chloride of Gold has been credited with causing absorption of the new fibrous growth, and recently injections of Fibrolysin have been recommended.

Castaigne insists upon the importance of open-air life, and he advocates opotherapy by feeding on fresh pork liver. He disapproves of Gilbert's method of aspirating a portion of the ascitic fluid and injecting it under the skin of the abdominal wall, but he recommends the injection of Adrenalin into the peritoneal cavity. Methylene Blue has been used in the same manner, and it is found to be rapidly absorbed and eliminated by the urine.

When ascites sets in notwithstanding the change in the patient's habits and the use of the above remedies, these should be continued. Cure is still not absolutely beyond hope, and the writer has a few times seen recovery follow where tapping had been deemed necessary. In a very small percentage of cases it appears that tapping may be even curative, and it should be resorted to early.

The treatment of ascites will be found fully detailed under its own heading, where the Talma-Morrison operation of omentopexy or epiploexy for the cure of cirrhosis is referred to—*i.e.*, the suturing of the liver and omentum to the abdominal wall with the view of readjusting the circulation through the new vessels formed in the resulting adhesions. The operation, according to the statistics published by Sinclair White of 227 cases, was successful in 37 per cent. Continuous drainage both before and after the operation should be employed, and the best results may be hoped for when there is evidence of a natural attempt at restoration of the circulation by the spontaneous enlargement of the superficial abdominal veins and when the operation is resorted to before the patient's strength is reduced by hæmorrhages, vomiting, &c.

For the treatment of true hypertrophic cirrhosis (Hanot's Disease), in which affection alcoholic abuse plays no causal part, little can be done save the administration of palliatives to relieve the symptoms which are common to it and to atrophic cirrhosis. Porto-caval anastomosis has been recommended; Cumston, believing that some cases of hepatic cirrhosis are caused by infection of the biliary tract from the intestine, recommends that the gall-bladder should be drained by cholecystostomy in all cases of hypertrophic cirrhosis with jaundice not yielding to medical treatment.

Vomiting may be met by counter-irritation over the gastric region, with Ice and effervescing mixtures internally. Bismuth, Alkalies, Hydrocyanic Acid, Creosote Capsules and Morphia Perules ($\frac{1}{8}$ gr. in each) may be tried. Papain or Pepsin is useful in some cases, and peptonised food often may be very valuable when the condition of the gastric membrane is much deranged. Hæmorrhage from the bowels, hæmorrhoids, diarrhœa, and

other complications are to be regarded as more or less conservative, and not to be interfered with too soon ; the only available treatment when the loss of blood is serious is to administer Calcium Chloride or Lactate in full doses.

Hæmatemesis will often yield to large rectal doses of the Calcium salts in combination with Adrenalin by the mouth in urgent cases, but death may take place from the rupture of a dilated œsophageal vein near the stomach in spite of all treatment.

LIVER COLIC—see Gall-Stones and Jaundice.

LIVER, Congestion or Inflammation of.

The treatment of the *passive* congestion caused by valvular affection of the heart will be found mentioned under Heart Disease.

Active hepatic congestion is usually the result of indiscretion in eating, the error being most frequently the indulgence in too much highly seasoned food along with alcoholic liquors when little exercise is taken, especially during tropical heat where chills are common.

Preventive and curative treatment consists in the removal of the causal factors ; the use of a simple spare diet of diluted milk or weak vegetable soups, and the avoidance of all forms of alcohol. Calomel in a series of small doses or one large dose, followed by a brisk Saline Cathartic every morning to relieve portal stasis, and 10 to 20 mins. Diluted Nitro-Hydrochloric Acid thrice daily constitute the best routine. The pain of the swollen liver may be relieved by leeching, cold local packs, warm poultices or counter-irritation. When the affection has followed the habitual bleeding from piles which has suddenly stopped, leeches may be applied to the perineum and the bites should be encouraged to bleed by the application of a warm antiseptic poultice. Any accompanying catarrh of the stomach usually yields to Calomel, Podophyllin or Euonymin followed by saline purgatives ; if not, Bismuth Carbonate in 20-gr. doses or a simple effervescing mixture may be ordered.

In chronic cases the diluted N.-H. acid is the best agent, alternating with short courses of 10 grs. Ammonium Chloride, or in tropical cases with Ipecacuanha in doses short of producing nausea. A local pack of the diluted acid is also very efficacious, alone or combined with more energetic hydropathic measures as cold douching, &c., and the administration of Quinine in malarial cases. A course of Carlsbad treatment is highly advantageous in all chronic forms of portal congestion.

LIVER, Fatty Disease of.

The treatment of *fatty degeneration* need hardly be considered, since this condition is beyond the reach of drugs save in those

rare cases due to the action of poisons, such as phosphorus, arsenic or antimony, in which the degenerative change will slowly pass off when the poison has been eliminated by the bowel or kidneys.

Fatty infiltration is usually a part of the obesity due to over-feeding by farinaceous and fatty foods in conjunction with absence of exercise and indulgence in alcohol. The treatment is that of obesity, and consists in the regulation of the diet, which should contain a moderate amount of lean animal food administered at regular hours, with abundant open-air exercises and only a necessary amount of sleep. Saline purgatives are always indicated. The fatty infiltration which sometimes accompanies pulmonary phthisis, profound cachexias and anæmias will demand attention to the primary condition as well as a readjustment of the dietary and measures which improve the aeration of the blood and the deficient metabolic processes by which the fats and carbohydrates of the food or of the tissues are transferred to the liver.

LIVER, Functional Affections of.

The treatment of the condition known popularly as "sluggish liver" or "biliousness" is that of a mild active congestion of the organ. It consists in a strict regulation of the amount and quality of the food to be administered, active open-air life, and the avoidance of alcohol. The intimate relationship of functional hepatic derangement to the condition recognised as lithæmia was insisted upon by Murchison. Whether the hepatic insufficiency be the result of errors in diet or of the production of toxins generated in the stomach, bowel or elsewhere, the treatment should be directed to eliminatory measures which stimulate peristalsis, relieve portal congestion and increase the activity of the kidneys. Occasional doses of Calomel, Podophyllin or Euonymin and a brisk morning saline purge should be steadily administered. Salicylates as in the true gouty condition are always useful, alcohol and excess of carbohydrates must be forbidden, and a free open-air life with abundance of active exercises should be insisted upon. A course of hydropathic and spa treatment, as at Harrogate, Carlsbad, or Kissingen, which is so valuable in the treatment of chronic hepatic congestion, may be advantageously recommended.

LIVER, Hydatids of—see Hydatids.

LIVER, Inflammation of.

The treatment is that of the primary condition as hydatids, abscess, &c.

Perihepatitis is often the result of syphilis, cirrhosis, or is part of an adhesive peritonitis arising from gall-bladder troubles. The treatment of the primary condition in this affection is of

secondary importance, since the mechanical impediment to the circulation cannot be removed by drugs.

Ascites being the chief sign calling for relief, tapping is clearly indicated, and when alcoholic cirrhosis does not complicate the case this procedure may prolong life indefinitely through repeated operations, in marked contrast to the results obtainable by tapping in cirrhosis.

Omentopexy may be resorted to with a fair hope of diverting the circulation in selected cases where there is no evidence that a cirrhotic state of the kidney coexists even though mediastino-pericardial adhesion be present.

LIVER, Injuries and Rupture of.

The shock and collapse should be met by absolute rest in the horizontal position, and it is wise to abstain from Morphia till the diagnosis of a rupture or laceration of the liver can be made certain where there has been no penetrating wound. As soon as evidence of hepatic injury has been rendered highly probable by the symptoms the abdomen should be opened without delay. Hæmorrhage should be promptly controlled by clamping the portal vessel between the fingers while all clots are being removed. Wounds in the hepatic substance should be ligatured by catgut sutures passed deeply into the hepatic tissue and drawn tightly so as to stop hæmorrhage even should the gland substance be partially cut by them. Where a ragged rent continues to bleed after deep suturing, the best procedure is to firmly pack the chasm with sterile gauze and bring the tail of the packing into the parietal wound, if the main bleeding trunk cannot be seized and ligatured separately. The peritoneal sac should be flushed with saline solution.

Penetrating wounds are treated upon the same lines, and after the passage of deep mattress sutures to arrest hæmorrhage the rent in the capsule should be closed by superficial stitches. Van Buren Knott's new liver suture is designed to avoid tearing of the hepatic tissue, and may be employed as a preliminary to the removal of a portion of liver tissue containing a tumour.

Sword or dagger wounds involving the liver through the diaphragm should be dealt with through the pleural route and the thoracic cavity isolated by suturing the diaphragmatic wound to the lips of the intercostal incision.

LIVER, Syphilitic Disease of.

Treatment consists in the persistent use of the remedies indicated in the treatment of the later stages of syphilis—*i.e.*, Mercury and Iodide of Potassium, the latter in large doses. Complications as pain, peritonitis, jaundice, vomiting, or ascites are to be dealt with upon the principles already mentioned. Under exceptional circumstances gummata may be excised, as when they are pedunculated and have resisted iodides, &c.

LOCOMOTOR ATAXIA.

Though progressive research continues to supply still more conclusive evidence of the cause of tabes dorsalis being invariably of syphilitic origin it affords little if any hope of a curative therapeutic. The view of Ford Robinson that the condition is dependent upon secondary infection by his *Bacillus paralyticans longus*—a diphtheroid organism which is supposed to effect its entrance through the urethral route—leaves little room for the hope that a curative serum can be obtained which would remove the gross structural lesions in the nervous system.

Nevertheless the treatment of tabes dorsalis must not be approached with a sense of therapeutic powerlessness for two strong reasons: Firstly, that when the disease is recognised in its pre-ataxic stage it is quite possible by judicious rest and hygienic treatment to prevent the advent of *ataxia*; and, secondly, that there are few incurable affections which afford such scope for scientifically applied symptomatic treatment whereby life may be prolonged in comparative comfort for an indefinite period.

The hygienic surroundings should be as perfect as possible; all business worries and mental strain as well as bodily fatigue must be minimised as far as possible. Regular hours of rest, sleep and feeding must be sedulously maintained. The diet should be strengthening but not too stimulating, alcohol being forbidden. The patient should wear flannel underclothing so as to avoid the possibility of chills, and care should be exercised in order to prevent falls or trauma. Sexual excess is a most potent factor in hastening the progress of the disease, and the tabetic patient should be warned against marriage.

When the case is seen in the pre-ataxic stage the above precautions, especially as regards the sexual functions and the maintenance of a life free from mental strain and active bodily exertion capable of inducing muscular fatigue, may avert for many years or even prevent altogether the supervention of *ataxia*. Recent pathological researches point to the important part played by muscular fatigue in inducing *ataxia* in tabetic subjects, and in all early cases rest should be insisted upon for long periods. The life of the tabetic patient should be regulated upon the lines suitable for the quiet existence of the victim of arterio-sclerosis, pressure of all kinds being avoided without entering upon a state of absolute invalidism.

Antisyphilitic Treatment.—Notwithstanding the predominating influence of syphilis as a causal factor Mercury and Iodides have a very narrow range of usefulness in this affection, and it cannot be doubted that in the advanced disease they always do harm. When a case upon first coming under observation shows evidence of the presence of any other syphilitic manifestation, whether of the late secondary, intermediate or active tertiary type, anti-syphilitic remedies should not be withheld. If the patient's

history reveals evidence of a primary syphilitic sore of 5 or even 7 years' date which had never been thoroughly treated by mercury, as is often the case when the secondary symptoms had been unusually mild, here also a mercurial course should be insisted upon. He should be advised to abandon all mental and physical work, and give himself up to a 2 or 3 months' course of treatment and rest. By far the best procedure in such cases is to insist upon a series of inunctions at Aix-la-Chapelle (Aachen), followed up by large doses 20 to 40 grs. Iodide of Sodium thrice daily. The Ehrlich-Hata ("606") treatment, though most efficacious in the earlier stages of syphilis, has already been reported as of value in a few cases of tabes which had supervened within the above-mentioned date, and if subsequent experience corroborates the first reports, the remedy should have a trial. Risien Russell has recently stated that he is so fully convinced of the efficacy of mercury in tabes that he considers no patient in the early stages of the disease should be allowed to go untreated by inunctions or injections (*British Medical Journal*, November, 1911).

There is, however, a consensus of opinion against active anti-syphilitic treatment in those cases of tabes where optic disc changes show themselves early, as the degenerative process in the optic and peripheral sensory nerves is likely to be still further hastened by mercury, arsenic and even iodides.

In the established disease the length of the list of drugs vaunted from time to time as curative agents may be accepted as proof of their futility. The natural history of tabes dorsalis shows that it is an affection liable to prolonged periods of halt in its progress, and even to stages during which marked alleviation of the symptoms spontaneously occur, hence any line of treatment which happened to be employed naturally achieved reputation as being of curative value till further experience demonstrated its worthlessness. This is the explanation of the abandonment of such measures as Suspension, Nerve-stretching and forcible flexion of the spine which formerly enjoyed a high degree of professional confidence. Probably the same fate is awaiting the fanciful new treatment of tabes by dilating or cauterising the urethra and many measures such as injecting Spermine, Brain Extract, &c., which only act by suggestion, are also now discredited.

Jensen has reported marked improvement from dilatation of the urethra in cases where no evidence of stricture existed, and he denies that the results could be attributed to suggestion.

Of drugs employed with the view of diminishing the tendency towards the sclerotic changes in the cord, alteratives like Arsenic Chloride of Aluminium or of Barium, Phosphorus, Chloride of Gold and Sodium and Nitrate of Silver have been from time to time extolled. The latest addition to the list is Fibrolysin administered hypodermically. The writer believes that the gold salt will give the best results ; whether it has any specific action

over the formation of newly formed fibrous tissue is not probable, but the tabetic patient often reports that he feels better and is freer from the usual troublesome symptoms when taking the drug. It is best given in $\frac{1}{10}$ -gr. doses in pill.

Gowers recommends arsenic and aluminium chloride ; the latter drug may be given in 3-gr. doses alone or in combination with Fowler's solution, but alternating courses of about a month each are preferable. The discoloration of the skin liable to follow nitrate of silver administration is a serious drawback, and if the drug is employed at all it should only be for short courses in doses of not more than $\frac{1}{4}$ gr.

Strychnine is a commonly prescribed drug ; any beneficial action which it possesses is probably due to its general tonic action. In full doses it is liable to aggravate the crises and lightning pains, but it certainly is useful when bladder troubles are present. Erb's tonic pill contains 1 gr. Lactate of Iron, $1\frac{1}{2}$ grs. Extract of Cinchona and $\frac{1}{5}$ gr. Ext. Nux Vomica. Iodides to be of value should be given in full doses and in courses not exceeding a month at a time.

Symptomatic Treatment.—The main hope in helping the tabetic patient must lie in the skilful use of agents and drugs to be employed upon generally accepted principles for the relief of the various symptoms present in each individual case, thus :

Ataxia can be greatly improved by the method introduced by Fraenkel in which by a careful education or retraining of the muscles the inco-ordination may be greatly lessened. The first step in this plan of treatment is to teach the patient to ignore or forget the old movement memories of his former healthy state and to turn to advantage a new series of memories which he can only learn by means of exercising his muscle groups with patient and persevering efforts at first guided by his eyes. Many afferent neurons have already perished, and the impressions which he receives through the surviving ones convey to him wrong sensations causing inco-ordination. He begins to practice standing between two nurses with his feet apart, and gradually narrowing his base he soon learns to maintain himself in the erect posture with his feet close together, after which he learns to stand upon one foot, and practices the placing of the suspended foot slowly and accurately down till he becomes able to stand upon his toes while his eyes are shut.

Walking with one foot upon a straight line or with both feet between two lines 12 inches apart chalked on the uncarpeted floor is to be practised several times a day for $\frac{1}{4}$ to $\frac{1}{2}$ hour at a time, stopping before physical or mental fatigue is induced. Afterwards curved lines are employed, and finally complicated figures should be practised with numerous turning-points. Before getting up and after retiring to rest various muscular movements may be practised whilst he lies upon his back in bed, such as touching with each toe some object suspended above the

bottom of the bed or slowly and accurately flexing his leg first and next his thigh he steadily extends the elevated foot and leg till his toe touches the object, after which the limb is gradually, brought again to the horizontal position. No new exercise should be tried till the former one has been accomplished with accuracy and comparative ease or alacrity. At various times during the day he should practice slowly sitting down and steadily rising up, commencing this exercise in an armchair with long arms. Climbing an easy stair with an attendant upon one side without hauling himself up by means of his arms on the handrail should be daily practised.

Massage and Electricity are always of use when the muscles are wasted and flabby, especially in long-standing cases where exercise has been neglected.

The continuous current is the most satisfactory for all purposes. One pole may be placed upon the upper part of the spine in the cervical region and the other one over the lower lumbar spines, and the current from fifteen to twenty Leclanché elements should be allowed to pass for about 5 minutes twice daily. A current from three to four cells should also be passed through the brain for a few minutes. A very good method is to place the positive pole upon the upper spines, and drop the negative into a warm or tepid footbath, in which both lower extremities are immersed for 5 or 10 minutes. Where the continuous current fails to afford any signs of improvement in the patient's condition, Faradic and static electricity have also been employed.

Radium Emanations applied to the spine have been reported upon by Fabre and Max to have produced remarkable improvement in all the symptoms of the affection, lessening pains, spasticity, &c.

A course of hydropathy is of use in some cases, and may be carried out in conjunction with massage or Fraenkel's method. Cold packs, the combination of douche and massage, or spray and needle baths, with frictions and manipulations applied to the spine and lower extremities, may be employed. Hot baths must be forbidden, though Leyden recommends the free use of baths at 86° to 95° F., and also of brine baths, and Luke recommends the peat and fango baths.

Counter-irritation applied to the spine is only indicated in those cases which exhibit marked spinal tenderness or where the ataxic symptoms have rapidly followed after a fall or concussion.

Bladder Troubles.—These are the most serious of all the symptoms of tabes, since they very often cause death from retention, cystitis and secondary kidney infection. The irritability of the bladder in the early stages of the disease, as evidenced by frequent attempts at micturition, passes at a later period into retention or the constant dribbling from a distended bladder, or ends in a purulent cystitis with a large amount of residual urine.

It is the duty of the physician in every case to look closely after the state of the bladder, and if any doubt exists about the patient's ability to completely empty the viscus the catheter should be passed after micturition in order to ascertain the amount of residual urine. As the main source of the mischief lies in the insensibility to stimuli from the distended bladder, preventive treatment is important, and should consist in compelling the patient to make water every couple of hours and to insure that the last drops are voided. Where any amount of residual urine is detected the patient must enter upon catheter life, the most scrupulous care in sterilisation of the instrument being exercised. The plan of waiting till a purulent cystitis develops before resorting to catheterisation is a mistake. When decomposed urine is voided or drawn off, the bladder should be freely irrigated with warm Boric Acid solution, a portion of which should be left behind after each washing. Internal antiseptics are clearly indicated in every such case; 5 mins. Creosote in a capsule twice daily is a valuable method for keeping the urine sterile, or 5 grs. Urotropin may be given in 1 dr. of Sanmetto. The tone of the bladder may be improved by full doses of Strychnine provided lightning pains are not present, and it may be further increased by a weak continuous current passed from the pubes to the sacrum, but the most efficient means of all to restore lost tone is to prevent dilatation or distension by repeated catheterisation.

Lightning Pains.—Rest in bed is essential, and the new analgesics for the relief of pain should always be employed in preference to narcotics on account of the danger of establishing a drug habit. Antipyrine 15 grs., Phenacetin 20 grs., Aspirin 20 grs., Methylene Blue 4 grs., Pyramidon 10 grs., Antifebrin 5 grs., Salicylate of Soda 30 grs., Exalgin 3 grs., may be accepted as maximum doses. Morphia hypodermically and Cocaine should only be resorted to under most exceptional circumstances. Gowers recommends 3-gr. doses of Chloride of Aluminium thrice daily to prevent recurrence, and Müller has reported permanent relief from Fibrolysin injections. When the pain is superficial it may be relieved sometimes by smart counter-irritation, a spray of Ethyl Chloride or Ether, Chloroform liniment, Menthol or warm packs.

The Continuous, Faradic, Static and High-frequency currents have all proved of some value in relieving severe lightning pains. Nitroglycerin and Amyl Nitrite are occasionally useful, but they need only be tried when the arterial pressure is high.

Crises.—When these are only moderately severe the agents useful for the relief of lightning pains should be tried, but severe attacks will require morphia hypodermically. Amyl inhalations sometimes relieve any form of visceral crisis when the tension is high. Gastric crisis demands rectal feeding, smart counter-irritation, or a hot poultice over the stomach, and small doses of $\frac{1}{4}$ gr. Cocaine with Bismuth or 3-min. capsules of Creosote. Ob-

stinate gastric crises have within the last 2 or 3 years been treated successfully by operative measures after the failure of all medicinal agents. Küttner and Foerster and others have reported permanent relief after the resection of the posterior nerve-roots from the seventh to the tenth on each side in order to interrupt the reflex nervous arc upon the integrity of which the symptoms depend.

Laryngeal crisis may be first treated by Amyl inhalation or a whiff of Chloroform or the upper part of the larynx may be brushed over with a solution of Cocaine. Bladder and rectal crises yield to Morphine alone or with Belladonna in suppository form.

Joint Troubles.—Little can be expected from treatment once acute symptoms of Charcot's trophic change have manifested themselves, and these may appear with almost incredible swiftness ending in rapid disintegration of all the arthritic tissues. Absolute rest to the affected articulation is necessary, and the application of carefully padded splints to minimise the dangers of dislocation. Sometimes incision and irrigation of the joint have done good when loose bodies and irregular masses of new bone have formed around the margins of the articular cavity.

Perforating Ulcers.—These are common in the foot about the head of the metatarsal bones of the great and little toes. The best treatment is rest, and the careful scraping away of any diseased bone, and the paring down of thickened skin and granulations. The writer has frequently seen complete healing follow the patient application of a weak continuous current, one pole being applied over the thigh and the other dropped into a warm salt-water foot-bath in which the affected limb is immersed for $\frac{1}{2}$ hour at a time two or three times daily. As soon as the patient is able to move about pressure should be taken off the skin over the affected area by the use of a thick insole of spongio-piline perforated opposite the site of the lesion.

Hyperæsthesia is much less common in various skin areas than the opposite condition; sometimes it shows itself by a well-marked girdle sensation. The best routine in such cases is to administer Antipyrine and to apply a weak continuous current to the spine. The actual cautery with a light touch and at a dull red heat has been successfully employed for the relief of spinal pain, but the dangers of sloughing must not be lost sight of.

LUMBAGO.

The patient must take to bed at once; dry warmth when applied immediately may abort the attack. The best form for the application of heat is the india-rubber bag only partially filled with hot water as can be borne and laid across the back. This is much better than hot poultices, which should be avoided. In the absence of the rubber bag or between the periods for its refilling a single layer of coarse brown paper being laid upon the

seat of the pain, the part may be smoothed or firmly pressed with a hot smoothing-iron, such an appliance as is used in laundry-work answering well. This meets every requirement which can be achieved by the actual cautery, and does not produce severe smarting.

Sir James Grant reports surprisingly good results from the old-fashioned Acupuncture when used according to his method, which consists in driving in several ordinary sewing-needles deep into the muscular tissue. These he believes cause the discharge of electricity from the muscle bundles. However such a method may be supposed to act, it cannot be denied that often complete relief rapidly follows.

Aquapuncture may be tried, the muscles being deeply punctured by a stout hollow needle and a few drops of sterilised water inserted before withdrawing the needle after each stab. This method may be advantageously combined with Cocaine or Morphia hypodermically if these substances are added to the water as in the writer's plan of treating severe sciatica. Anti-pyrine, Amyl Nitrite, Carbolic Acid and other drugs may be employed in the same way, but their use is followed by severe pain.

Of local anodyne applications there is no end ; the most popular of these are liniments or plasters which contain Belladonna. They should be used with great caution, however, since the standardisation of the B.P. preparations has insured a high degree of activity in both the official plaster and liniment, which have certainly caused poisoning from the absorption of atropine through the unbroken skin in numerous instances. The following application may be applied upon lint covered in with oiled silk, but its effects must be closely watched :

R. *Liniment. Belladonnæ* ʒij.

Liniment. Aconiti ʒiss.

Liniment. Chloroformi ad ʒvj. *Misce.*

The Chloroform of Belladonna (*Squire*) is a powerful local anodyne. For routine use the Emp. Menthol is safer than that of belladonna. The variety spread upon perforated felt may be applied over a large surface or the ordinary rubber adhesive plaster may be applied so as to partially fix the spine. In very acute cases severe pain may be relieved by the spray of Ethyl Chloride or of Ether, but as a rule cold applications are to be avoided.

Counter-irritation is more suitable for chronic or recurring cases when these do not yield to anodynes or to a thick layer of Antiphlogistine or of Cataplasma Kaolini (U.S.P.) covered in with mackintosh sheeting.

Blisters, the Cautery, Chili paste, Capsicum or Calorific Wool, Dry Cupping, Croton Oil Liniment, Tartar Emetic Ointment, Liquor Iodi, &c., have all been highly recommended in chronic

cases. One of the best counter-irritating liniments is the Lin. Camph. Ammon. or the Lin. Tereb. Acetic.

In very chronic cases a flannel binder sprinkled with Sublimed Sulphur may be continuously worn around the loins, and the use of the various appliances for producing rapid vibration are often very beneficial.

In obstinate cases where the attack has originally followed sprains or injuries of the lumbar muscles it may be necessary under Chloroform to forcibly flex and extend the spinal column with the pelvic and the thigh muscles in order to break down adhesions the result of the long-standing fibrositis.

Electrical treatment is of considerable value in lumbago. Occasionally speedy disappearance of all pain has been found to follow the early application of a moderately strong continuous current. It is the best routine treatment in chronic or recurring cases when combined with massage and the judicious use of douches and hydropathic measures at resorts like Bath, Droitwich, Nantwich, Matlock and Harrogate. Static and high-frequency currents and Faradism are also valuable, and X-ray and Radium emanations have been extolled.

Internal treatment, though mentioned last, is of equal importance, and is to be carried out concurrently with local measures. It is to be pursued upon antirheumatic and eliminatory principles.

Salicylates are the most frequently employed of all internal remedies. Before resorting to them the writer's routine in all severe cases is to administer a wineglassful of unsweetened Gin made into hot punch after the patient has been put into a warm bed between blankets; this dose sometimes succeeds in cutting short the attack with promptitude. 20 grs. Sodium Salicylate, 15 grs. Aspirin, 10 grs. Salol, 10 mins. Methyl Salicylate, 15 grs. Salicylic Acid, 20 grs. Salicin, 15 grs. Salacetol, 10 grs. Salophen, or 10 grs. Novaspirin may be given thrice daily.

Rarely will Morphia internally be necessary to combat pain, and before resorting to it local anodynes and the coal-tar analgesics should be tried. When urgently indicated 15 grs. Dover's Powder or $\frac{1}{4}$ gr. of the hydrochloride hypodermically may be administered.

Diaphoretics and diuretics are always useful, but as all the salicylates act in these ways other emunctories are seldom employed. Mindererus Spirit, Citrate of Potassium in large doses with Spirits of Nitre or small doses (5 grs.) of Nitrate of Potassium may be used alternating with the doses of salicylates, or the hot-air or thermo-electric bath may be resorted to in order to excite free skin action.

Colchicum in combination with full doses of Iodides is most valuable in gouty subjects; Dr. S. B. Coates has obtained excellent and speedy results in the ordinary rheumatic type of lumbago by administering Tincture of Iodine, and many physicians still adhere to the use of 30-min. doses Tincture of *Actæa Racemosa*.

In chronic cases Guaiacum still holds its place, and a course of the Chelsea Pensioner which contains Sulphur and Nitre in addition is a favourite remedy. Arsenic occasionally does good, and Quinine Salicylate in debilitated subjects may be advantageously employed.

The bowels will require free purgation by salines with an occasional previous dose of Calomel or Blue Pill, and the diet should be such as is suitable for gouty and rheumatic subjects with a sparing allowance of red meats and purins. Active but not fatiguing muscular exercises should be regularly indulged in after convalescence to minimise recurrence of attacks.

LUMBAR PUNCTURE.

This agent of late years has been so frequently employed in diagnosis in the treatment of various spinal and cerebral conditions, and of some infective diseases and for the production of spinal anæsthesia that in order to prevent repetition a short description of the usual methods of carrying out the procedure is here detailed.

The spinal cord ends opposite the intervertebral disc between the first and second lumbar segments of the spine, but the sac with its contained fluid extends as low as the third sacral ring, and may therefore be tapped in any of the spaces between the lumbar vertebræ below the first one. Some surgeons select the space between the second and third, others that between the third and fourth, and the space being widest between the fourth and fifth is preferred by most operators.

The skin having been sterilised the patient is placed lying upon his left side with his knees drawn upwards and the spinal column thoroughly flexed; a horizontal line joining the highest points of the iliac crests marks the upper limit of the fourth lumbar spine. Local anæsthesia being effected by a spray of Ethyl Chloride a sterilised stout hollow needle 3 or 4 inches long is thrust into the space between the fourth and fifth vertebræ, entering about $\frac{1}{2}$ an inch below the fourth spine in the median line and pushed firmly onwards and slightly upwards and a little inwards till the spinal theca is perforated. In normal conditions the clear and colourless cerebro-spinal fluid trickles out guttatim through the needle when the spinal sac has been entered. In pathological conditions, as in high intracranial pressure, the fluid will escape forcibly in a stream.

Where the pressure is high from the accumulation of fluid 30 to 40 c.c. may be slowly and safely withdrawn, as in meningitis, cerebral tumour, eclampsia, &c.

Where the introduction of any liquid agent is demanded the cerebro-spinal fluid should be permitted to flow till 8 to 10 c.c. have escaped, after which the injection is made before withdrawing the needle by attaching to it any ordinary serum syringe. 30 c.c. (1 oz.) may be injected by employing very gentle pressure

to the piston of the instrument, as in the treatment of cerebro-spinal meningitis or tetanus by antitoxic sera.

In the production of spinal anæsthesia for operations on the lower part of the body the puncture may be made at the same spot or in either of the next two lumbar spaces above this. After allowing a little of the cerebro-spinal fluid to trickle through the needle into a sterilised syringe and to mix with the anæsthetic substance in solution the mixed fluid is slowly injected (2 per cent. Tropacocaine or 5 per cent. Stovaine).

Isotonic solutions are recommended by Bier, but Barker employs a liquid of much higher density, using 1 c.c. of a 5 per cent. Stovaine with 5 per cent. Glucose. The S.G. of this liquid is 1.023, contrasting with the S.G. of 1.007 of the cerebro-spinal fluid, and no adrenalin is added to it. The S.G. of Chaput's stovaine solution is 1.0831, and of Bier's 1.0058. By raising the pelvis the fluid may be permitted to flow by gravitation upwards, so that a "high anæsthesia" may be effected. By keeping the patient upon his side the lower limb, which is in contact with the bed, may be rendered anæsthetic, whilst the uppermost leg remains unaffected. The total quantity of tropacocaine or stovaine employed need not exceed 6 centigrammes, or about 1 gr., and steriles are procurable containing this amount.

By the above method the most formidable pelvic and abdominal operations have been commenced within 10 minutes and conducted without pain. By the addition of a milligramme ($\frac{1}{85}$) gr. Strychnine to the stovaine dose Jonnesco maintains that any interference with the action of the breathing is prevented, so that operations may be undertaken upon the neck, cranium or face after injecting in the cervical region.

Many untoward effects, as prolonged headache, squinting, retention of urine, paralysis and nephritis have been observed, and already several deaths have been recorded, though some authorities regard the method to be as safe as chloroform anæsthesia. One advantage which is claimed for it over general anæsthesia is the absence of post-operative shock.

LUNG, Abscess of.

The general treatment should be that suitable for pulmonary phthisis or lung gangrene, as improved feeding, open-air life, &c., and the administration of volatile antiseptics by the stomach and by inhalation in order to diminish the tendency towards secondary septic infection from germs in the respired air.

Surgical procedures are available in a considerable percentage of cases, and where the abscess is situated near to the lung surface a satisfactory result may be achieved by pneumotomy. After localising the abscess cavity by X rays and by the insertion of an exploring needle a free incision is made under local anæsthesia; portions of the overlying ribs having been excised, the lung is fully exposed. When complete adhesions shutting off the pleural

cavity are found present it is only necessary to incise the lung substance with a scalpel or to open the abscess cavity with the thermo-cautery and after evacuation of the pus to insert a large drainage-tube without any attempt at irrigation, as in empyema. But in the absence of adhesions the pulmonary and parietal pleuræ must be carefully stitched together by a ring of sutures introduced through the lung tissue before opening the abscess.

Some surgeons operate in the air-tight chamber of Sauerbruch under a negative pressure of 10 milligrammes Mercury with the head of the patient projecting through an aperture in the wall of the cabinet, whilst others raise the atmospheric pressure in the lung by pumping in air through a helmet apparatus applied to the patient's face in order to prevent collapse of the lung by air entering the pleural sac. Neither of these precautions are necessary if the suturing of the two pleural layers be accomplished with thoroughness. It is advisable, however, to perform the operation in two stages; the wound after suturing the parietal pleura to the lung having been carefully plugged with gauze, the abscess cavity may be opened after 48 hours by the aspirator by inserting a trochar and canula, incising with the knife or entering with the thermo-cautery and leaving in a drainage-tube.

Pneumonotomy is not admissible for the treatment of tuberculous cavities, but is clearly indicated in those cases of pulmonary abscess following pneumonia and hepatic suppuration.

LUNG, Collapse of.

This condition is a not infrequent complication of acute bronchitis in children, and its treatment is detailed under Bronchitis, p. 114.

The pulmonary collapse liable to supervene in operations and injuries to the pleura may be prevented by the methods of operating under differential pressure referred to under Abscess and Wounds of the Lung. See also under Pneumothorax.

W. Pasteur has shown that massive collapse of the lung may occur from muscular paralysis after diphtheria and abdominal operations. In such cases Strychnine hypodermically and artificial respiration are the best measures.

LUNG, Congestion of.

In active engorgement of the pulmonary substance the treatment should be directed to the primary cause, and in all urgent cases relief must be given to the distended state of the right auricle and ventricle by opening a large vein and letting out at least 15 oz. blood.

The treatment of passive or mechanical congestion is, as a rule, that of the valvular disease and failing compensation which causes it, as detailed under Heart Diseases. The form of pulmonary congestion recognised as hypostatic and met with in prolonged fevers and in old bedridden patients who have long remained

in an unchanged physical posture producing a gravitation hyperæmia, is a serious condition. It should be always prevented and (once it has appeared) treated by promptly altering the patient's position in bed and maintaining a constant succession of such changes by turning him over from side to side, sponging or douching the chest with cold water, compelling him to take deep inspirations, and in urgent cases performing artificial respiration by Schäfer's method. Strychnine hypodermically may be resorted to in all cases, and a diluted oxygen atmosphere may be inhaled with advantage. Smart counter-irritation of the chest wall is usually beneficial.

LUNG, Diseases of—see Phthisis, Emphysema, Pneumonia, Asthma, Hydatids, Bronchitis, etc.

LUNG, Gangrene of.

The management of this condition is identical almost with the treatment of bronchiectasis detailed upon p. 109. Thus whilst every means is being employed to keep up the patient's strength and to improve the state of his nutrition, measures should be taken to diminish, as far as possible, the decomposition of the bronchial secretion and the fœtor or stench which surrounds him. This may be attempted by the administration of volatile antiseptics internally, and by the saturation of the surrounding atmosphere with similar agents. Creosote in doses of 2 to 5 mins., in an emulsion or in capsular form, is the best. Turpentine, Myrtol, Oil of Santal or of Eucalyptus or of Peppermint, are also useful. Carbolic Acid cannot be given internally for any considerable period of time with safety in doses sufficiently large for this purpose. Sulpho-carbolates have been found to diminish the abominable odour from the perspiration. Recently Berliner has reported marked success from the injection into the gluteal region of 5 c.c. every 7 days of a 25 per cent. solution of Eucalyptol in Castor Oil.

The Creosote Chamber, if available, is the best of all methods for disinfecting directly the decomposing pulmonary tissue; in its absence the air of the room may be kept saturated with Oil of Turpentine. This may be accomplished by periodically pouring some of the oil upon the surface of very hot or boiling water, but the rapid evaporation or vaporisation of the turpentine soon ceases, as the temperature of the water falls. The writer's plan is to fill metallic trays or pans half full of dry pine sawdust, upon which the oil is to be freely sprinkled from time to time. A uniform degree of evaporation may be thus obtained. A good method which he has also tried with satisfactory results is to make a muslin or gauze coverlet, and fill it with freshly teased-out oakum. This may be kept upon the patient's bed, and the oakum can be easily renewed, or sprinkled over from time to time with Turpentine, Eucalyptus Oil, or other volatile antiseptic.

Creolin, Chlorinated Lime, Sulphurous Acid, Commercial Terebene, Sanitas, or any of the innumerable cheap disinfectants may be used for the same purpose, and a spray apparatus may be employed to diffuse the disinfectant through the atmosphere.

The use of antiseptics by the ordinary earthenware inhalers is not to be relied upon. Where a very thorough disinfectant action is required, the volatile ingredient may be poured upon boiling water contained in a large wash-basin, as the patient holds his head over it, whilst a linen sheet is thrown loosely over him, so as to extemporise a tent, under which the concentrated vapour may be freely breathed at intervals of a few hours during the day. During the rest of the day and night he will be breathing the more diluted antiseptic atmosphere, unless when in bright warm sunshine he can be permitted to go into the open air.

Oxygen inhalation is often very serviceable, but to be of use it must be employed for long periods.

Atomisers containing Menthol, Eucalyptol, &c., in oily solution may be employed, and sprays are of considerable use, and are less troublesome, though of less efficacy, than the steaming under a sheet; by their use particles of a solution containing non-volatile ingredients may be projected in a state of minute subdivision, so that they may come into contact with putrefying secretions about the naso-pharynx, larynx, and larger air-tubes. The following solutions may be used:—

Solution of Chlorinated Lime, Solution of Chlorinated Soda and Sulphurous Acid, each 1 in 20; Bichloride of Mercury, 1 to 2 grs. in 10 oz.; Creosote or Carbolic Acid, 1 dr. in 10 oz.; Biniodide of Mercury, 1 to 2 grs. dissolved with KI, in 10 oz. water; Creolin, 1 to 5 per cent. solutions in water.

Yeo's perforated Zinc oro-nasal respirator may be worn for considerable portions of the day, the wool being kept moistened by diluted solutions of Carbolic Acid, Iodine, Creosote, Turpinol, Terpene, Terebene, Eucalyptus, Iodoform, Thymol, Menthol, &c., as in the following:

R. *Menthol* ʒij.
 Creosoti Purificati ʒiij.
 Thymol ʒss.
 Spirit. Vini Rect. ad ʒiv. *Misce.*

Intralaryngeal injections of Menthol, as mentioned upon p. 541, may be tried. The injection of antiseptics through the chest wall into the gangrenous cavity has not been satisfactory.

The expectoration should be passed directly into a spittoon, containing some powerful disinfectant and deodoriser like Turpentine, Eucalyptus, Chlorinated Lime, or Permanganate of Potassium in strong solution. It is only by rigid attention to these details that the abominable fœtor can be so diminished as to permit the nurse and attendant to approach the patient closely.

When the physical signs, aided by the use of the X rays and the exploring needle, reveal a gangrenous abscess cavity, the operation of cutting down upon it, performing pneumonotomy with the galvano-cautery or scalpel, evacuating its contents and establishing free drainage, as described in a preceding article, gives excellent results, and may be performed without resorting to the method of operating under differential pressure.

LUNG, Inflammation of—see **Pneumonia**.

LUNG, Œdema of.

This is secondary to valvular disease of the heart, arteriosclerosis, or to Bright's disease, or merely as a local result of a general anasarca, and its treatment is detailed under the name of the primary affection. The chief indication in the majority of cases is to stimulate the heart with Strychnine and Digitalis. As much as 10 mins. of the B.P. Liquor of Strychnine may be injected in a desperate case. In the acute form associated with dilatation of the right ventricle a large vein should be opened and 10 oz. blood removed, or wet cupping over the back of the chest if rapidly carried out may save life in apparently hopeless cases. Nothnagel advocated one *large* blister, and the hypodermic injection of Camphorated Oil. This may be administered in 15-min. doses *ter die* of a 20 per cent. solution in Olive Oil, but in all urgent cases a vein should be opened.

LUNG, Syphilis of.

The primary cause, obviously, must give the key-note to the treatment in this rare condition. Mercury is, however, seldom indicated owing to the late period at which the tertiary pulmonary implication appears, but it may be given as in other cases when the history shows that mercurialisation had been previously omitted during the secondary stage of the syphilis. Main reliance must be placed in large doses of the Iodides administered for periods of several months. These drugs always assist the bringing up of the muco-purulent expectoration caused by the accompanying bronchitis. In many cases the clinical picture is that produced by bronchiectasis, and it may be complicated by the presence of tubercle. Volatile antiseptics, the Creosote Chamber, antiseptic inhalations, open-air treatment with over-feeding, and the exhibition of remedies indicated in pulmonary phthisis will then be clearly indicated.

LUNG, Wounds of.

Perfect rest in an easy position, with the patient lying upon the wounded side or propped up in bed is essential, together with the administration of such stimulants or restoratives as will combat the accompanying symptoms of shock. Where blood is present in the pleural cavity the procedures detailed in the article on Hæmothorax are to be carried out, and where air has

been admitted the treatment described under Pneumothorax is indicated. Surgical emphysema will demand little interference ; its management is detailed under Emphysema (General).

The recent advances made in thoracic surgery by the introduction of the differential pressure methods as carried out by the Sauerbruch negative pressure and Brauer's positive pressure cabinets, enable the surgeon to open the cavity of the chest without the dangers of pulmonary collapse. By these methods he is now able to deal directly with wounds of the lung substance after demonstrating the exact site of the lesion by the stream of air issuing from the wounded spot under the altered pressure ; the suction of the air from the cellular tissue under the negative pressure speedily reduces general emphysema. The cabinet also renders operation as safe in dealing with wounds of the heart and great vessels as in cases of lung wounds, foreign bodies in the bronchi and bullets lodged in the pulmonary substance or mediastina.

LUPUS ERYTHEMATOSUS.

The treatment of this affection is most tedious and unsatisfactory, and must remain so as long as its pathology remains a riddle.

Any departure from the healthy standard is to be carefully sought out and treated upon general principles, and every means should be utilised whereby the general nutrition of the body is to be improved, and the general indications in this respect will be those mentioned under Phthisis, &c.

No internal remedy is known which exerts a specific action upon the disease, though the list of drugs tried is a long one. Arsenic, Salicin, Phosphorus, Ichthyol, Quinine, Iodides, Ergot, Iron, Mercury and a host of alterative and antiseptic substances have been from time to time vaunted as remedies. When it is remembered that in a small proportion of cases the affection disappears when left to itself, it can be readily seen that the apparent cures probably owe little to the remedy which has been employed.

Of the above list probably the best results have been achieved by Quinine and Ichthyol, and these should be given in combination with Cod-Liver Oil, which always is useful as a nutrient. In acute cases accompanied by much erythema Chloride or Lactate of Calcium may be tried in order to increase the coagulability of the blood and check the accompanying hyperæmia.

The local treatment of lupus erythematosus is a difficult subject to discuss in the limited space of a short article like the present, especially as a survey of its literature would almost lead one to conclude that nearly every known inorganic remedy had been recommended for its destruction at some time or other. This is the more remarkable as the affection is a comparatively rare one. Another inherent difficulty, apart from the extraordinary multiplicity of so-called remedies, is the task of giving a clear idea of the agents indicated at the different stages and

variations of the disease without a minute description of these stages, which vary in almost every instance. These remarks apply with more or less truth to the treatment of true lupus also. As stated by Pye-Smith, the treatment of erythematous lupus is that of the milder forms of lupus vulgaris, stimulating or soothing applications generally taking the place of caustics, cautery or the curette.

Soothing lotions or ointments are indicated to relieve congestion and pain in the early or erythematous stage. Speaking generally, cases at this period of the disease may receive the treatment most useful in acute eczema. Thus a bland, unirritating ointment, such as the B.P. Ungt. Zinci, to which Liq. Plumbi Fort. (1 in 20) is added, or a cream or paste made by rubbing up the Oxide of Zinc with Olive Oil, may be smeared over the parts with a brush several times a day. A weak Lead lotion (1 in 20), and Calamine or Zinc Oxide lotion (1 in 25) containing a little Alcohol may be applied and allowed to evaporate. Adrenalin in weak solution may be painted over congested areas.

Most dermatologists agree that the best routine local application for the relief of hyperæmia and itching is Ichthyol made into a cream or paste (1 in 3) with lanoline, but before this can become efficacious it will be necessary to remove the scales, especially in the seborrhœic type of the affection, by the application of a solution of Soft Soap in Alcohol (1 in 2).

Flexile Collodion painted constantly over the part and permitted to dry causes compression of the vessels, and, provided one layer be added before the cracking or peeling of the former one renders its action void, a continuous action may be kept up which, with great care and patience, may prove valuable. It protects the parts from changes of temperature, and by the compression of the tissue, may starve out the small-celled growth and promote absorption of effused inflammatory products.

Stimulating applications at a later stage may be tried, but in this sometimes a difficulty presents itself, one part of the patch being distinctly erythematous, whilst the other shows infiltration or scarring. Tarry compounds are valuable, and, if employed with skill and caution at this stage, may give good results. The most suitable is an ointment varying in strength from $\frac{1}{2}$ to 2 drs. of the Liquor Carbonis Detergens to 1 oz. of Lanoline. When this fails the next best method of treatment will consist in the application of the B.P. Unguentum Hydrargyri, or a 10 per cent. ointment of the Oleate of Mercury upon lint, which should be kept in contact with the part constantly.

Caustics must be used with great discrimination, and are only admissible for very limited patches, and deep corrosives like Chloride of Zinc must be avoided, but a superficial caustic like pure Carbolic or Lactic Acid may be cautiously applied to a circumscribed area. Pyrogallic Acid applied in the form of a

10 per cent. ointment for 3 or 4 days till the brown eschar forms, after the separation of which Iodoform ointment and gauze are used, is advocated by Veiel, and MacLeod recommends the application of a spirituous solution of Resorcin 1 in 10 painted on every 7 days.

Carbonic Acid Snow has given excellent results when employed by MacLeod's method of collecting the snow in a small vulcanite funnel and pressing it upon the part to be acted upon by a piston introduced into the funnel. Liquid Air has been employed by Crocker.

Good effects were formerly obtained by Squire's linear multiple incisions or scarifications made by a suitable instrument. With great care these incisions may be made with the point of a fine, very sharp scalpel or tenotomy knife, so as to leave the healthy skin untouched. The object of these minute incisions or punctures is to cause destruction of new vessels, and so starve out the growth and cause its absorption. The punctures should not exceed $\frac{1}{8}$ inch in depth, and they should be as close together as possible. The previous hypodermic injection of Adrenalin with Eucaine renders the operation painless and bloodless; afterwards a strong Iodoform ointment should be rubbed in or Iodoform gauze applied under slight pressure.

The most recent development in the treatment of erythematous lupus is the employment of Cataphoresis or Ionisation, which has given the best of all results in the hands of Graham Little and others in dealing with small patches of the disease. The technique of this method will be found described in the *Lancet*, October 31, 1908.

X-rays and Finsen-Light treatment, High-Frequency currents and Radium emanations are still being employed, but Cataphoresis promises to supersede them all, as the ions from zinc sulphate or chloride, having the power of penetrating the diseased cells, effect resolution without scarring; this method may in suitable cases be combined with linear scarification or phototherapy.

LUPUS VULGARIS.

As the disease in all its types is due to the presence of the tubercle bacillus in the cells of the skin, *constitutional* treatment is always clearly indicated. This should proceed upon the lines indicated in phthisis and other localised forms of tuberculosis—as overfeeding, cod-liver oil, open-air life and improved hygiene.

Vaccine treatment as carried out by minute doses of Tuberculin controlled by the opsonic index according to Sir A. Wright's methods is invariably useful, though very rarely, if ever, curative when used alone. In conjunction with various plans of local treatment vaccine therapy is often invaluable, and in a considerable number of cases which have resisted all local methods, cure can only be achieved by the judicious employment of tuber-

culin in combination with these, so that notwithstanding the popularity of light treatment, vaccine therapy in lupus must always be recognised as an agent of unquestionable value.

In this connection the interesting research conducted by Wright upon the opsonic index of 150 lupus patients who had been treated by Finsen therapy and X rays is of vital importance. He found that with very few exceptions where the opsonic index was well below the normal (0.97), light and X-ray treatment were practically powerless to stamp out the disease. By the use of vaccine therapy to raise the opsonic index the infected areas become more decidedly amenable to the influence of the rays and of light, and in all intractable cases tuberculin should be employed in conjunction with these local agents. Thyroid feeding in some cases appears to act in a similar manner, but in less satisfactory degree, and is also well worthy of a trial where from any reasons tuberculin injections are inadmissible. For similar reasons the internal use of such agents as Iron, Arsenic, Phosphorus, Creosote, Iodine or Iodoform, Hetol and Cinnamylic Acid occasionally proves a useful adjunct to local treatment by strengthening the depressed vital resistance of the tissues.

Iodoform has been employed with remarkable success by Dewar, who injects 15 mins. intravenously of an ethereal solution with liquid paraffin every second day, the local ulcerating lesions being simultaneously treated by Hydrogen Peroxide.

The writer witnessed before the introduction of photo-therapy striking results in the hands of Fournier and Richet from the injection of the blood serum of healthy dogs.

Sea-water injections have been extolled by Robert-Simon, who states that he has observed cure follow after the failure of all other constitutional and local treatments.

Local Treatment.—This will vary with the site, type of the affection, amount of irritation or ulceration present, activity of the disease, &c. A destructive agent may be indicated at one part of the lupus-patch, whilst a soothing ointment may be indicated at another part.

Light Treatment.—Finsen's light is the most reliable routine method of treating lupus of the face, and the best results are obtainable in nodular and ulcerating lupus. The great advantage over the older surgical methods lies in the final cosmetic effects produced, as scarring is entirely prevented or reduced to a minimum. Unfortunately the method is most expensive and tedious, requiring the skilful supervision of the professional expert and a complicated apparatus, together with the services of experienced nurses, and cannot possibly be carried out at the house of the patient. Installation places are usually provided with lamps arranged so that several patients can be treated at the same time by the light proceeding from a single lamp.

A powerful electric arc lamp is employed and the heat rays are intercepted by passing them through rock crystal lenses

and a solution of copper sulphate, which does not stop the blue rays. The heating effects are still further minimised by causing the rays to pass through cylinders of water placed between the concentrating crystal lenses. A small area only can be submitted to the action of the concentrated light at each sitting, which should last for about one hour, and in order to permit the actinic rays to penetrate the lupoid nodules it is necessary to compress the part operated upon by a flat transparent substance in order to render the part bloodless. The best compressor for this purpose consists of two layers of quartz, with a space between filled with water, which can be kept cool by continuous circulation to still further minimise the heat effects of the red rays which have escaped through the copper solution; by the use of such a compressor the copper filter may sometimes be entirely dispensed with.

The best procedure in nodular lupus is to commence at the circumferential part of the patch, leaving the centre to be attacked last. Upon the termination of each hourly sitting the part should be covered by lint smeared over with vaseline, and a soothing ointment or lotion may be afterwards necessary to remove the vesication or œdematous redness which usually follows some hours after the application of the concentrated light. Thus one portion of the patch will require the soothing treatment suitable for lupus erythematosus whilst recovering from the reaction caused by the lights whilst a new area is being submitted to exposure. From time to time the old areas are to be examined under the compressor in order to determine whether the apple-jelly nodules have all been dissipated, and re-exposure of every portion must be resorted to as long as any nodules can be discerned.

As many months are necessary for a cure, various methods have been introduced in order to hasten the process; one of the most effective of these is to puncture each nodule with a pointed piece of wood or a gooseberry-thorn dipped in pure Carbolic Acid. Another is to resort to vaccine therapy by Tuberculin in minute doses, and in every intractable case the opsonic index should be determined, and when this is found to be low the injections should commence without delay.

Direct concentrated sunlight in the tropics or subtropical countries has been tried with excellent results when Finsen light is not procurable.

X-Ray Treatment.—This in some cases is even more reliable than Finsen light, especially in the hypertrophic and ulcerative types of lupus, but it is decidedly less valuable in the nodular form of the disease. The sittings are shorter and are much less painful, and much larger areas can be operated upon each time at longer intervals, and it possesses the great advantage of penetrating to the diseased nasal membrane, which Rankin has emphasised as being almost invariably affected in facial lupus. There are great practical difficulties in the way of submitting the nasal mucosa to Finsen light, so that when this latter method of treatment is persisted in it is always necessary to resort to

the galvano-cautery, curetting or caustics. Many observers point to the danger of cancer supervening after prolonged X-ray treatment, and some highly recommend alternating courses with Finsen light; during the intervals tuberculin injections may be also employed.

Radium Treatment.—Emanations of radium have hitherto failed to produce results comparable to Finsen light and X rays. Injections of water submitted to the emanations of this marvellous agent, Wickham's method of injecting solutions of radium and the application of radium ointment are all being tested. Thorium Paste is extolled by Bulkley, who states that its radio-active properties reinforce its caustic action.

Electricity has been employed in the form of the static brush by Suchier's method, and excellent results have been recorded. The application of Hot Air (300°) by Hollander's method under anæsthesia has few adherents.

Cataphoresis, or Ionisation (using Zinc solutions), after linear scarification, has recently become a favourite method with some dermatologists, but this line of treatment is better suited to the erythematous type of lupus.

Reyn has recently reported successful cases treated by Iodine ionisation.

Surgical Treatment.—Excision of the patch of lupoid tissue and the supplying of the lost skin by grafting afford the most rapid and complete means of getting rid of the disease, but this method of treatment is manifestly inadmissible where the face is affected and where any considerable patch on the body or limbs is present, especially as the incisions must be carried far outside the active margin of the disease. It is really only applicable to the smallest patches outside the face and neck, and therefore needs but to be mentioned.

Curetting or scraping is a futile procedure in most cases, but nevertheless it is often a valuable adjuvant to light, X-ray, radium or caustic treatment by preparing the diseased surface for the reception of these powerful agents.

The Galvano- or Thermo-cautery is more reliable when thoroughly employed, but the great objection to its use lies in the disfiguring results following cicatrisation. It is, however, a most valuable method of dealing with lupus of the nasal mucosa, which should be treated by numerous fine punctures made by the galvano-cautery, and this latter method may still be advantageously employed in selected cases in conjunction with the light treatment where the nodules in the ulcerated surface are obstinate, each nodule being separately dealt with by a fine-pointed terminal.

Scarification by linear incisions, as in lupus erythematosus, is sometimes resorted to in conjunction with the application of caustics and other methods, but it has a very limited range of usefulness.

Caustics.—Every known form of chemical destructive substance has been employed in the treatment of lupus, and though

these agents have been largely discarded since the introduction of the light and X-ray methods, nevertheless in selected cases, when skilfully employed, excellent results may be obtained, especially when they are used in conjunction with photo-therapy in face lupus or alone in small circumscribed patches on other parts of the body.

Arsenic is the most powerful, but as its action extends deeply and widely and cannot be circumscribed, it therefore leaves most disfiguring scars, and is, moreover, intensely painful, and should never be employed on the face.

Lupus on the hands, body or feet may be treated by Hebra's Paste :—

R. *Acid. Arsenios.* gr. xv.
 Hydr. Sulphid. Rub. gr. xlv.
 Ungt. Rosæ ʒvj. *Misce.*

This spread on lint may be applied for 48 hours to the patch.

Some good reports of the application and of the hypodermic injection of Fowler's Solution have been recorded, but the drug has been abandoned.

Salicylic Acid is invaluable as a caustic in *verrucose* or warty lupus, and may be applied as a paste, 1 dr. to 1 oz. Glycerin, when large surfaces are involved. For small patches a paste consisting of equal parts Salicylic Acid and Creosote may be applied, or preferably Unna's Salicylic Acid and Creosote Plaster Mull may be laid on the patch twice daily after brushing it with cocaine, till the nodules are converted into small whitish sloughs. Another convenient method is to apply the acid in the form of an ointment—Creosote 2, Salicylic Acid 1, simple ointment 2—which should be spread upon lint and covered with oiled silk. This must be applied for a considerable period, according to the evidence of its destructive action on the nodules, but the physician and patient must reconcile themselves to the slowness of the process and to a considerable amount of painful smarting after the acid has been able to penetrate the lupoid tissue, but the resulting scar will repay the exercise of patience, since it is much less unsightly than that following surgical procedures.

Brookes's Ointment, *rubbed in* vigorously every night for half an hour and for half this time every morning, the parts being afterwards dredged with Starch, is a valuable method of using the acid. The following is the formula :—

R. *Acid. Salicylic.* gr. xl.
 Ichthyol min. xl.
 Zinci Ox. et Pulv. Amyli ana ʒss.
 Vaselin. Alb. ʒj.
 Hydrarg. Oleat. (5 per cent.) ʒij.
 Olei Lavandulæ q.s. *Misce.*

Pure Lactic Acid acts in a similar manner, and exercises its selective action upon the diseased cells. It is most suitable in the ulcerating stage and may be used in various forms; that of a paste, consisting of about equal quantities of the syrupy acid and kaolin, is the method most recommended. It is also painted on with a brush or injected hypodermically (1 in 2) into the tissue in the diseased area. The simple method devised by the writer, and from which he has never seen any ill-effects, is the following:—After previous cleansing, paint the ulcerated surface over with a 15 per cent. Cocaine solution before applying the acid, and wipe it quite dry with absorbent wool immediately before the acid is brought into contact with it. Make a little map of the ulcerated surface, so as to cut out neatly and accurately a folded piece of lint (2 plies) of the same size and shape as the patch. These should be soaked for some minutes in the pure concentrated acid, the surplus acid being removed by gentle pressure before being accurately applied to the patch with a pair of forceps; it is a wise precaution to smear over the margin of healthy skin around the ulcerated patch with lanoline before applying the acid.

The pain is often severe, and lasts some hours. The lint may be covered with oiled silk, but the writer does not do so. He applies some more acid to it with a brush after a few hours, without disturbing its position. It may be left in contact for about four hours. Authorities differ, some directing an application of 15 minutes, and others recommending one of 10 hours, after which Spirit Lotion on lint may be applied under oiled silk. The number of applications required in any given case can only be determined by the effect. After three or four days the surface should be very minutely examined, and any suspicious portions subjected from time to time to the action of the acid, applied upon little circular islands of lint, for 6, 8, or 10 hours. The treatment will extend over several weeks or months, and as parts of the original patch become entirely healed, others, probably, may be discovered in which the diseased action is in full swing.

Lactic Acid is one of the most reliable agents for the destruction of lupus in the nose and palate. The syrupy acid may be applied with a brush after carefully drying the cleansed part with cotton-wool. Both these acids may be advantageously employed in conjunction with light and X-ray treatment when the patient's means will not admit of continuous attendance at a hospital far from home for long periods.

Pyrogallic Acid has like selective action on the diseased tissue, and may be applied as a 25 per cent. plaster, but it is an agent not free from danger. Veiel uses Pyrogallol diluted with 9 parts of vaseline applied daily till vesication occurs, after which a vaseline 1 in 50 is employed to dress the irritated patch, and the strength is gradually reduced as healing occurs, till a strength of

1 in 1,000 is reached. The vaseline may be applied to the nasal membrane on plugs of lint.

Zinc Chloride should be confined in its application to cases where scraping or curetting has been performed, and Vienna Paste should never be used at all on the face.

Carbolic Acid, though very superficial in its action, is a most efficient caustic when skilfully applied. It may be employed by two different methods. Dreuw after freezing the patch with Ethyl Chloride spray or Carbonic Acid Gas, rubs in the strong acid most thoroughly over the whole surface of the patch by means of a stout stick whose extremity is covered over with cotton-wool. The cauterised surface is dressed with dry Euguform. Carbolic Acid applied in this manner is not free from danger, as it seems possible that a large slough might follow which would cause serious deformity.

A thoroughly legitimate method of using this caustic has been already mentioned—*i.e.*, by thrusting a piece of pointed match-wood dipped in the acid into each nodule and turning it round so as to well apply the caustic to the lupoid tissue. Hutchinson employs the Liq. Hydr. Pernit. in the same manner, and these may be used to expedite the light or X-ray treatments.

Permanganate of Potassium may be employed like the carbolic acid; thus the dry powdered salt may be sprinkled over an extensive patch after this has been cleansed and lightly scraped, or a crystal may be thrust into each nodule after puncturing with a finely pointed piece of wood.

Perchloride of Mercury is employed in this manner by Unna, who applies it to each punctured nodule in the following solution:—Perchloride 60 grs., Creosote 4 drs., Spirit. Rectif. $2\frac{1}{2}$ oz.

Iodine Paste, prepared by triturating equal quantities of pure metallic iodine and tincture of iodine together, and adding to the mixture an equal amount of glycerin, is a manageable and efficient caustic in the ulcerating stage, and effectually destroys secondary infective organisms. A minute quantity may be also thrust deeply into each punctured nodule.

Nitrate of Silver was a favourite remedy with Hebra. It may be used as a solution (60 grs. to 1 oz.), or as the solid stick, which is better. This may be thrust into the papular or tubercular elevations after puncture with a lancet, and, though terribly painful, it is very efficacious.

Chromic Acid has been recommended to be used in the same manner, but it should never be employed about the face, as it often penetrates deeply, and may cause very unsightly scars.

Iodoform rubbed in deeply after linear scarification is still employed with success by some dermatologists, who report that the resulting cicatrix is very satisfactory.

Ethylate of Sodium Solution is an excellent caustic where there is little tissue calling for destruction. The B.P. Solution may be daily brushed over the diseased patch (which should be dried with

blotting-paper), by means of a glass brush till a scab forms, which falls off in a few days, after which the applications are to be renewed. If pain is severe, a drop of Chloroform may be applied. This converts the Ethylate into Ether and Chloride of Sodium. The scarring is comparatively slight.

Carbonic Acid Snow, though more useful in lupus erythematosus, has been reported as giving satisfactory results in ordinary lupus also, the resulting scar being flexible and of good colour.

The various treatments for lupus may be summarised in the following list in the order of their value :

1. Finsen Light.
2. X Rays.
3. A combination of these methods used alternately, especially when the nasal mucous membrane is deeply involved. In the ulcerative stage the Finsen light may be employed for the periphery and the X rays for the centre of the patch.
4. Vaccine Therapy in all cases not readily yielding to above, if employed in conjunction with their continuance, but of little value when used alone.
5. Excision when the patch is small and is situated upon any part except on the face and neck.
6. Scraping, Thermo- or Galvano-Cautery and Scarification or Multiple Puncture, when combined with the former methods or used in conjunction with caustic treatment, or alone when employed for the disease in mucous membranes.
7. Cataphoresis or Electrolysis when the diseased action is very superficial.
8. Caustics (1) when the disease is located in the mucous membrane, scraping having been previously resorted to ; (2) when the patches are not on the face ; and (3) in lupus verrucosus ; (4) in conjunction with light, X-ray, radium, and vaccine therapy, to expedite these methods, the caustic being applied to each nodule separately or more extensively to a freely ulcerating surface on the face.

9. Radium, which is still upon its trial.

In a simple case of nodular or ulcerating lupus on the face there is no necessity to resort to any form of treatment save Finsen light when the opsonic index is not low, and when the patient's means permit of a prolonged sojourn at the place of installation. This method should be regarded as the most efficient routine and the only one which is absolutely free from all danger of making the patient's case worse even in those rare cases which are refractory.

Scrofuloderma is to be treated upon the same lines as lupus verrucosus, the epithelial casing of the patch being first removed by Salicylic paste, the underlying lupoid tissue may be attacked by Finsen light, X rays, caustics or the cautery ; small patches may be excised. Verruca necrogenica is to be treated upon the same principles ; excision is preferable to caustics.

LYMPHADENITIS.

A distinction must be made between the acute and chronic forms of inflammation affecting lymphatic glands.

Acute and *subacute* lymphadenitis being almost always due to the introduction of septic organisms through a wound or abrasion, the cocci finding their way along the lymph stream till blocked by the nearest glands, the first indication for treatment will be found in the disinfection of the wound and the relief of pain and pyrexia. Endeavour should be made to *prevent suppuration*; the part containing the acutely inflamed gland must be put into a state of rest as complete or absolute as possible. The best routine application to the gland is a warmed antiseptic solution as Carbolic lotion (1 in 40), Saturated Boric Acid solution or Spirit lotion (1 in 4), and these should be covered over with oiled silk and bandaged lightly under wool, the idea being to give the region all the advantages of an internal part and so increase the natural resistance by diminishing tension and bringing a fuller blood-supply to the inflamed gland. Upon the same principles Bier's method of inducing passive hyperæmia by the pressure of an elastic bandage or by Klapp's suction-bell is employed by some surgeons.

Various old-fashioned methods appear to act in a similar manner, such as counter-irritation by Iodine or Iodised Phenol, strong Nitrate of Silver, Pernitrate of Mercury, and even by blistering, but no application necessitating friction or rubbing should ever be employed. Some surgeons prefer to employ counter-irritation in the form of the thermo-cautery passed lightly over the skin in order to prevent suppuration.

The plan of injecting a few minims of Carbolic Acid or Tincture of Iodine, Benzoate of Mercury, &c., into the gland and surrounding tissue is advocated, and may be employed where the infection is a dangerous one as in bubonic plague, but suppuration is more liable to be determined than prevented by such measures.

Strong Iodine Liquor applied in a broad line over the inflamed lymphatic vessels between the wound and the gland always gives satisfactory results, and frequently relieves pain in a marked manner and diminishes the lymphangitis.

A favourite abortive remedy is a cream made of Ichthyol or Green Extract of Belladonna and Glycerin, and this is preferred to all other local applications. (See also under Abscess and Bubo.)

Hot and cold applications have each their advocates, and the same result—*i.e.*, resolution without suppuration—may be secured by either. By ice, evaporating lotions, cold compresses, or Leiter's tubes the tension and arterial supply are soon markedly lessened, and the inflammation as evidenced by pain, heat, redness and swelling soon diminishes or disappears. When hot or warm compresses or poultices are applied, as shown by Brunton, the capillaries of the collateral circulation are dilated and the current

is diverted from the inflamed vessels. Up to a certain point both methods of treatment tend to prevent suppuration ; and the writer has satisfied himself that, contrary to the popular notion, warm poultices prevent suppuration by reducing the tension of an inflamed gland if applied at an early stage, the general relaxation of the tissues sometimes speedily relieving the tension which is fatal to the life of the organ. At a later stage, by keeping up a continuous moist warmth and reducing the tension of the skin, poultices hasten the pointing of the abscess.

Compresses at a very high temperature are recommended by Nasiloff. He drops several plies of linen into boiling water, squeezes them out quickly, and applies them directly over the inflamed gland and envelops the part for 15 minutes in a thick pad of cotton-wool. A large sponge squeezed out of very hot water and covered with mackintosh makes a good application. The best guide to the selection of hot or cold applications is the sensation of comfort or pain produced, the application from which the patient derives the greatest ease being always preferred. Once the pus has formed there should be no delay in its evacuation. If the collection of matter is large as when a group of glands and their loose surrounding tissue are converted into an abscess, a free incision should be made with a scalpel, and the blades of a dressing forceps inserted deeply and opened to secure free evacuation without the danger of wounding large vessels as in the axilla or neck (Hilton's method).

Warmed spirit lotion or boric compresses may be applied to the open wound.

A free incision usually does away with the necessity of inserting a drainage-tube, but where a *small* wound is necessary to avoid visible scarring as when the adenitis follows some irritation about the jaws the incision should be as limited as possible compatible with evacuation, and a fine drainage-tube or a few shreds of carbolised tow or horsehair will establish the removal of all pus as it is secreted. (See under Abscess, where the aseptic treatment of acute abscesses is detailed.) After the free removal of pus and the application of spirit lotion under oiled silk, the cavity may be syringed out with weak Sublimate Solution from time to time as it heals up from the bottom, or it may be packed with sterilised gauze.

Some surgeons prefer to aspirate and inject the abscess cavity with Iodoform Emulsion, but this is more suitable for chronic cases. Whilst others make an incision just large enough to admit a fine spoon, with which they scoop out any remaining portion of the gland which has not become converted into pus.

Upon the whole, the best routine for glands about the neck is to make a minute incision with a tenotomy knife and then to apply a Klapp's suction-bell over the wound after first inserting a blunt curette to remove any small sloughs. The bell may be used 2 or 3 times a day till the cavity is thoroughly cleansed ;

healing is rapid under this treatment, and the scar is small. (See also under Abscess.)

In recurring septic lymphadenitis Vaccine treatment should be resorted to.

TUBERCULOUS ADENITIS.

Chronic inflammation of lymphatic glands may for all practical purposes be regarded as of tuberculous origin. The writer has endeavoured to show in his Cavendish Lecture for 1908 that the main source of the tubercle invasion is through the lymphatics and vessels of the intestine, the glands being ultimately reached by the main stream, and he has been able to eradicate the disease and successfully to protect the inmates of a large industrial school where tuberculous adenitis was always rife by a simple process of sterilising the milk-supply. Though protection of the intestinal route is of primary and vital importance, the physician will be wise before dealing with cervical lymphadenitis to examine the mouth for carious teeth, the middle ear for suppurative disease, and the pharynx for enlarged tonsils and adenoids. These conditions must first be remedied by surgical measures, and in a considerable percentage of cases resolution of the swollen glands may be expected. The infection under such circumstances is probably of a dual nature, and will subside upon removal of one of the infective agents. The constitutional treatment indicated in tuberculosis must be followed out. Where the cervical glands remain indolent with no tendency towards suppuration, various local procedures have been advocated.

The old treatment of applying a strong solution of Iodine (equal parts of the tincture and the liquor) has still some advocates, and though now condemned by most surgeons it never can do any real harm, and in conjunction with other methods may well have a prolonged trial. The Lin. Pot. Iod. C. Sapone is not open to the objection of producing unsightly discoloration. Rest to the head and neck should as far as possible be secured. Injection into the glands of antiseptic solutions and pure Carbolic Acid should be avoided, as little benefit can follow and often suppuration results.

Vaccine treatment by minute doses of Tuberculin affords unquestionably the best routine in all such cases, and it should be patiently employed in conjunction with the internal administration of Iodide of Iron and Cod-Liver Oil with open-air life and improved hygiene.

The serious undertaking of excision of the indolent glands will have to be considered when the vaccine and other constitutional treatments prove ineffectual. The writer has had very extensive experience of the results of excision carried out in the most skilful and thorough manner and he has kept in touch with at least 50 cases where the operation has been faultlessly performed, and he has become convinced that the ultimate results are such

as have not yet been realised by surgeons, who often lose sight of the patients after the immediately successful operation.

It cannot be denied that the danger to life occasioned by the presence of indolent tuberculous glands is a trifling one. The percentage of cases in which phthisis and bone involvement follow is very small. A somewhat parallel condition is observed in the graver condition of hip-joint disease, which is followed (when not treated by excision) by an astonishingly small percentage of lung involvement. The same holds true, but in a more remarkable degree, when the natural course of lupus is studied. 75 per cent. *at least* of all cases of excision of the cervical glands which the writer has watched over a period of 7 years has succumbed to pulmonary tuberculosis, and he believes that the time has already come when the indications for this formidable operation should be gravely reconsidered.

The only permanently successful cures which he has witnessed have occurred in cases where the tuberculous adenitis was of a very circumscribed nature, and where the disease was of very long standing. Under these conditions, combined with a high degree of unsightly deformity, there need be little hesitation in recommending a radical operation, but where the entire glands of the neck are enlarged on both sides, and especially where there is axillary adenitis in conjunction with them, the operation should be abandoned. Partial operations should also never be attempted; once the operation is commenced every enlarged gland found present should be excised after the removal of the main mass. The skin incision will be determined by the site of the enlargement; usually in extensive operations the most convenient lines of incision are a horizontal one beneath the lower jaw, and another above the clavicle, these being connected by a line along the course of the sterno-mastoid forming a Z-shaped wound, which permits of clearing out of both the posterior and anterior triangles of the neck.

When suppuration occurs in tuberculous glands there can be no room for differences of opinion regarding the necessity for surgical interference. To wait till the abscess spontaneously perforates the skin is certain to lead to the infection of the cutaneous tissues and the abscess cavity with pyogenic organisms introduced from without.

As the contents of these abscesses are often sterile there is ample scope for successful aseptic surgical measures. Various procedures are followed, and in the main these are such as have already been detailed in the articles on Abscess and Hip-Joint Disease. The common situation of the suppurating gland at the angle of the jaw or anterior aspect of the neck introduces the problem of cosmetic effect, and the surgeon's endeavour should be to evacuate the contents and leave as small a scar as possible. Hence he usually avoids the most obviously speedy method of a free incision and drainage, but the plan of making

a small wound and squeezing the tissues to evacuate the pus is also objectionable.

The skin having been sterilised, an incision is made with a tenotomy knife, and a curette introduced to scrape the walls of the abscess cavity, which may be filled with a warmed emulsion of Iodoform (Iodoform, 60 ; Sesamé Oil, 40 ; Spermaceti, 40), after which the wound may be sealed up without drainage. The needle of the aspirator is sometimes used instead of the knife and spoon, and the injection of Iodoform made after removing the fluid contents before withdrawing the needle.

The plan of applying a Klapp's suction-bell over a small incision as in the treatment of acute septic lymphadenitis is sometimes resorted to.

Any of the methods described under Abscess may be followed. When the skin has already become involved the best procedure is to pack the cavity with Iodoform gauze after scraping with the sharp spoon. It may be necessary to clip away the infected overlying skin margins.

Sinuses may be most satisfactorily healed by injecting Beck's Bismuth Paste (warmed) into the openings, but this preparation should not be used as the iodoform emulsion for filling the abscess cavity before sealing up the wound in the skin.

Tuberculous lymphadenitis is rare in the groin glands, but many years ago before excision was introduced the writer successfully dissected out a mass of chronically inflamed glands in the interior of which was a large calcareous deposit. This had led to the case being regarded for years as one of disease of the femur, since a probe introduced through any of the numerous sinuses struck upon the calcareous mass.

Lymphadenitis involving the mediastinal glands is as a rule only to be dealt with by open-air life and improved hygiene combined with minute doses of Tuberculin controlled by opsonic observations. Mesenteric Gland Disease will be referred to under its own heading.

The acute non-suppurative cervical lymphadenitis of Dawson Williams, like that present in German Measles, requires no active interference, as spontaneous resolution always occurs.

LYMPHADENOMA.

This peculiar enlargement of the lymphatic glands is also known under a variety of names as Hodgkin's Disease, Pseudo-Leukæmia, Lymphatic Anæmia, Lymphadenia, &c.

Fraenkel and Much have by a recent research shown the presence of a bacillus in the enlarged glands, which they also discovered in lymphatic leukæmia, which if corroborated will establish the connection of these diseases, hitherto regarded as differing essentially, and will explain some problems in the treatment of the affection.

The local treatment of Hodgkin's disease has up to the present

proved most unsatisfactory. The few cases in which early excision of the glandular mass was followed by cure are suspected of being cases of mistaken diagnosis, and it cannot be doubted that in the later stages of the disease removal of the enlarged glands is worse than useless, and should be attempted only when by their mechanical pressure on vital parts life is seriously threatened. The injection of the glands by antiseptic solutions has not led to any benefit.

X rays have recently been much extolled; they certainly possess remarkable power in reducing the bulk of the tumours, and therefore have been prematurely pronounced upon as a curative agent. But careful observation has demonstrated that this treatment is powerless to prevent the extension of the disease to the liver and spleen even when the glands shrink greatly in size under its influence.

The only treatment to be depended upon is the internal administration of Arsenic, and upon the evidence of Allbutt, Dreschfeld and others this has in a small percentage of cases proved completely effective. The drug may be given hypodermically in the form of Cacodylate of Soda or by the mouth as Fowler's Solution; in either case the dose must be increased till physiological effects are elicited short of producing poisoning. Thus less than 15 mins. of the liquor arsenicalis thrice daily need not be expected to make any impression upon the glandular enlargements.

The disease is obviously due to the presence of a microbe; whether the bacillus of Fraenkel and Much is the causal organism remains to be demonstrated, but in any case the hope remains that in some organic arsenical compound as "606" or other drug of the same nature a real curative agent will be forthcoming. Iodine, Bone Marrow, Thyroid Gland, Phosphorus, Mercury and many other agents have proved useless.

Vaccine therapy with minute doses of Tuberculin has proved curative in several cases which have obviously been of tuberculous nature, and not instances of true lymphadenoma or Hodgkin's disease. Likewise early excision is the only hope in those almost clinically identical examples of true lympho-sarcoma starting in an accessible lymphatic gland.

The constitutional results of lymphadenoma as anæmia, pyrexia, marasmus, cardiac weakness, &c., are to be combated by the employment of the drugs directed to each special symptom.

LYMPHANGIECTASIS.

The treatment of dilated or varicose conditions of the lymphatic vessels is detailed under Chyluria and Elephantiasis. When the diseased area is a small one it may be met by excision, as in the cord, groin or scrotum. Sometimes Handley's operation of lymphangioplasty may be resorted to when extensive areas of tissue are involved, but to be of any use the operation must be

preceded by Vaccine treatment to free the tissues of whatever infective organisms (staphylococci) are present.

Lymphangiomata (cystic or cavernous) should be dealt with on the same principles as are utilised in the treatment of the somewhat similar condition affecting the bloodvessels and constituting nævi. When the growth is small and circumscribed complete excision may be possible, but as a rule electrolysis or multiform puncturing with the galvano-cautery is preferable. The larger cystic lymphangiomata constituting hydrocele of the neck are better left alone, as they sometimes spontaneously disappear, but when by their mechanical pressure they interfere with respiration the cyst will require tapping and injection of the sac by iodine, or if practicable an attempt may be made at excision. Should the contents become purulent from secondary infection the hydrocele should be treated by free incision and drainage.

LYMPHANGITIS, OR ANGEIOLEUCITIS.

Inflammation of peripheral lymphatic vessels is always septic, and must be treated upon the lines followed in acute adenitis or lymphadenitis. Attention should be at once directed to any injury or wound which has been the starting-point of the affection. This should be treated by antiseptic poultices (Spirit or Carbolic Lotion, under oiled silk), and the free evacuation of any collection of pus by proper incisions. Where the lymphangitis is superficial, and the red, tender, painful and swollen lymphatic vessels can be discerned extending from the wound in the direction of the lymphatic glands, benefit can be got by painting over the inflamed area with the Liniment of Iodine, and prescribing absolute rest to the affected limb. Extract of Belladonna and Glycerin may be employed when the pain is very severe, followed afterwards by an evaporating or a warm spirit lotion. Where tension and pain are prominent, a large hot poultice may afford relief and even diminish the chance of suppuration.

Bier's elastic ligature or Klapp's suction-bell sometimes cuts short the inflammatory action by bringing about an increased blood-supply and flushing the part with a healthy lymph stream bearing increased amounts of the natural antitoxins.

Pus should be evacuated as soon as it is found to be present, and warm antiseptic dressings applied.

In chronic and recurring lymphangitis a vaccine prepared from a culture of the causal micro-organism should be resorted to.

The remote result of a severe lymphangitis sometimes shows itself in the presence of a permanent solid or brawny œdema owing to obliteration of the peripheral lymphatic vessels. This condition may be successfully met by the new operation of Lymphangioplasty, introduced by Handley, which consists in the introduction of sterilised thick silken threads which are made to traverse the œdematous region, being embedded permanently in

the tissue of a contiguous region whose lymphatic channels are healthy. The strands of silk drain the affected area by capillary attraction, and thus act as new lymphatic vessels, and will withstand absorption for many years. The writer has had one very successful case, already referred to, in which Mr. A. B. Mitchell performed the operation for an œdema which surrounded the orbits after an attack of erysipelas.

Lymphangioplasty has also been employed with success in elephantiasis in conjunction with vaccine therapy, and in the great œdema which sometimes follows the operation of total excision of the breast.

LYMPHATISM.

The treatment of this serious involvement of the entire lymphatic system need hardly be considered, since its presence is usually never suspected till the autopsy reveals the cause of the sudden death, often during convalescence from some acute infective or other malady. As the condition has often been found associated with rickets, the primary treatment of this affection is all that is clearly indicated should lymphatism be suspected, as no known drug exerts any influence over the hyperplasia of the lymphoid tissue throughout the body.

"*Thymus Tod*" is often associated with lymphatism, and is maintained to be but a part of the latter affection, the enlargement of the thymus gland corresponding to the hyperplasia seen in the various parts of the lymphatic system. In this diseased condition urgent dyspnoea, or thymic asthma so called, may be relieved by tracheotomy and the introduction of a long tube into the trachea to counteract the pressure of the enlarged thymus, which may afterwards be elevated by suturing to the cervical fascia.

Rachford has recently reported two cases of status lymphaticus in which thymic asthma and marked lymphocytosis were present; these were treated with marked relief to all the symptoms by X rays. 16 sittings were employed, the exposures lasting 3 to 8 minutes anteriorly and posteriorly, with the result that the thymus, spleen and lymph nodes diminished very considerably in size, and the cough, asthma, stridor and lymphocytosis disappeared.

MADURA FOOT, OR MYCETOMA.

This is a disease common in some parts of India where the natives employed in agriculture work in the fields with bare feet. No known drug exercises any specific action upon the fungus, which gains admission to the deeper tissues through some slight cutaneous abrasion. Iodides, so valuable in the allied condition of actinomycosis, are useless. The only treatment of any value must be surgical, and if the affection be radically dealt with in its early stages by free excision of the fungus-invaded tissues,

thorough scraping or curetting and the free application of caustics, the disease may be arrested in some cases.

Amputation of the foot above the ankle-joint is the only procedure of any use in advanced cases, and sometimes the hand will also have to be sacrificed when the fungus has gained an entry in order to prevent marasmus and death from necrosis of bones and prolonged suppuration.

MALARIA.

Prophylaxis.—Great attention has of late years been bestowed upon preventive treatment since the fact has been demonstrated that the disease is conveyed from the sick to the healthy by the bite of the mosquito. The most important and efficient of all methods of stamping out the disease consists in the destruction of the stagnant pools of the swamps which form the breeding-ground of the insect. Improved drainage, by levelling and planting the soil with trees in the neighbourhood of dwellings and the covering over of all collections of water by a film of kerosene or tarry liquid, which causes the suffocation of the larvæ of the mosquito.

Those suffering from malaria should be isolated by fine netting in order to prevent the insects becoming infected with the parasites, and the healthy can effectually protect themselves with similar netting from the bites of the insects, since *Anopheles* is always nocturnal in its feeding habits in bright weather.

As their range of flight is limited, a high degree of protection can be obtained from the mosquito by sleeping as far above the level of the ground as possible. Minor aids may be employed, as smearing the skin over with *Eucalyptus*, Peppermint Oil or Tincture of *Pyrethrum*, which prevents the insect biting, and also the burning of aromatic substances in the sleeping apartments once the mosquitoes have obtained admission.

Quinine internally will often entirely protect the healthy individual for long periods from malaria, though bitten by infected insects, but less than a daily dose of 5 grs. cannot be relied upon. Plehn's method of "double prophylaxis" consists in the administration of 8 grs. every fourth and fifth or every fifth and sixth day. Koch's plan was to give 15 to 24 grs. upon two consecutive days at intervals of 8 to 10 days, and is known as the "long-interval prophylaxis." When employed as a prophylactic the insoluble Sulphate should be used, but when quinine is administered as a curative agent the Acid Hydrochloride should be selected. Chundra saturates the system with Calcium Sulphide.

Once an attack of malaria has shown itself the patient should immediately be put to bed, and hot-water bottles and warm clothing freely supplied. Hot drinks or warmed stimulants are useful. Nitrite of Amyl and other nitrites very often stop the chill promptly, but do not appear to influence the succeeding stages. Pilocarpine in a full dose ($\frac{1}{4}$ to $\frac{1}{2}$ gr.), administered hypodermically at the first onset of the symptoms, has been said

in some cases to cause abortion of the attack. To be of any use, however, it must be given at the very commencement of the seizure. Chloroform, internally, in one full dose, or one large dose of Opium, has been also found to diminish the duration and intensity of the attack. The hypodermic injection of Morphia often gives great relief at this stage. Moderate purgation should generally be prescribed, as it undoubtedly increases the efficacy of the remedies to be afterwards given in the later stages.

In the hot stage considerable relief may be obtained by removal of the extra clothing and the free sponging of the skin with cold or tepid water. Cold compresses are grateful. Coma and hyperpyrexia should be met by the cold bath or cold pack as in sunstroke.

In the sweating stage gentle friction with hot towels and changes of underclothing may give some relief. After this stage is over, the patient may be permitted to get up and move about in the regular forms of intermittent malaria.

For the treatment of malaria in all its forms and types Quinine is the sovereign remedy, and should always be resorted to. Much interest has been taken in its action upon the parasite in the blood, and we now perhaps know more about the therapeutic action of this drug than is known of almost any other internal remedy employed in disease. By withdrawing small quantities of blood at different stages of the malarial attack it has been determined that the young brood, when showered free into the circulating plasma, are much more susceptible to its lethal influence than are the intracorpuseular forms. A single large dose (15 grs.) when given shortly before a paroxysm of the benign intermittent fevers will effect the destruction of the great majority of the young parasites, but the rigor is not prevented by this treatment, though another attack may not occur.

The parasites causing the malignant types of malaria are still less susceptible to quinine when in the intracorpuseular stage of existence. Though there cannot be any doubt about the ideal time for the full therapeutic action of the drug being 3 to 5 hours before the rigor, this should not dominate the situation. Quinine in all cases should be given as soon as the patient comes under observation, without waiting for the advent of any particular stage in the parasite's cycle of development. The object should be to saturate the patient's blood with the drug at once and to continue its administration for 3 or 4 weeks in smaller doses.

For the *regular intermittent* types of the disease (tertian and quartan ague) 15 grs. Quinine Hydrochloride should be given by the mouth, though often a smaller dose is sufficient, and 5 grs. twice a day afterwards meet the indications in all cases.

The *irregular intermittent*, the *remittent*, the *continuous* and *pernicious* types will require a more prompt and thorough saturation of the blood. 15 grs. of the Acid Hydrochloride should

be injected deeply into the buttock, or, better still, into a vein, and 5 grs. given by the mouth every 4 hours after. Rarely is it necessary even in the worst cases to exceed a daily dose of 45 grs. A man of 140 lbs. weight who has received an intravenous injection of 15 grs. will have sufficient quinine in his blood to correspond to a solution of 1 in 5,000, and the epoch-making research of Binz has demonstrated that 1 in 50,000 is quite sufficient to destroy the allied amœboid organisms in hay infusion.

When even double the above amounts of the insoluble sulphate of quinine are administered by the mouth they are slowly absorbed by the gastric mucosa, and the constant elimination of the drug by the kidneys prevents any high degree of saturation of the blood by the drug, so that it is quite possible for the victim of pernicious malaria to perish with a large amount of unabsorbed quinine in his stomach; hence the necessity in all grave and urgent cases to place the whole dose at once in his circulating fluid.

Quinine has apparently no influence over the gametocytes, but as these bodies only appear after the asexual forms have reproduced themselves in the blood, it is probable that early resort to treatment diminishes the chance of their formation and tends to prevent the spread of the disease by the mosquito.

Cohen advocates the deep injection of 15 grs. Quinine-Urea, which, like the acid hydrochloride, is soluble in its own weight of water, and he states that after a single injection there is an apyrexial period of either six and a half or thirteen days, which is of important diagnostic significance.

Upon the whole the best injection for intravenous use is the following formula:

R. *Quininæ Hydrochlor. Acidi* gr. xv.
Sodii Chloridi gr. j.
Aquæ Destillatæ ʒiij.

For intramuscular or deep injection, 15 grs. of the acid hydrochloride should be dissolved in 1 dr. water and administered after the solution has been sterilised by boiling in a test-tube.

The "Koch" treatment of malaria is carried out by commencing with a preliminary dose of 5 grs. Calomel, followed by a saline purge in 6 hours. If a blood-film shows parasites 15 grs. sulphate of quinine are given by the mouth, and this dose is repeated each morning for 5 days. 15 grs. are given on the tenth, eleventh and twelfth day, and repeated every tenth day for a period of 13 weeks.

Whichever method or plan of employing the drug is to be accepted, the guiding principle should be to produce a rapid saturation of the blood and to keep up the effect till all traces of the parasites have disappeared from blood-films taken periodically. When this latter technique must often be dispensed with in practice, the drug should be continued for long periods, since

its administration can do no harm save in some cases of Blackwater fever (which see).

It is useless to print the long list of drugs which have been, and still are, recommended for the treatment of malaria. The action of quinine must be regarded as of the nature of a specific one, and it is not probable that even the marvellous "606" is at all likely to supplant it. Though this latter drug has produced remarkably rapid effects upon the parasites, the results have been transitory. Enesol or Salicyl-Arsenate of Mercury is more reliable, and 1 gr. may be injected where quinine cannot be borne. Methylene blue and the Cacodylates and Warburg's Tincture may be tried when from any reason quinine cannot be tolerated, as in Blackwater fever.

The complications which occur during an attack of malarial fever are to be treated upon the recognised principles suitable in each case.

Church of Tibet in pernicious malarial fever advocates transfusion of a "hypotonic" saline solution (30 grs. to 1 pint); the fluid should be rapidly introduced, as interaction with the tissue fluids in a very short time diminishes the positive osmotic pressure on the surrounding plasma, and Quinine should be administered previously to deal with the parasites more effectively reached in the intracellular osmotic ebb and flow.

In the treatment of the so-called *Malarial Cachexia* Quinine is often of little use if given alone; Arsenic and Iron are always indicated, but they should be combined with quinine. A pill containing the following answers most cases, whether of enlarged spleen, anæmia, neuralgia, or cardiac weakness supervening upon old attacks of malaria:

R. *Ferri Arsenatis* gr. $\frac{1}{8}$.
 Ferri Redacti gr. j.
 Ext. Nuc. Vomicae gr. ss.
 Quininæ Sulphatis gr. iij. *Misce.*

Fiat pil. St. unam ter in die post cibum.

The splenic enlargement, like most of the other sequelæ, often resists every form of treatment till the patient is removed from the malarious district. A long sea-voyage or a sojourn at a spa where hydropathic measures may be employed in conjunction with the internal use of a weak arsenical water, as at Bourboule, Vals, Mont Doré, Baden-Baden and Plombières, or at Woodhall, in Lincolnshire.

MALIGNANT PUSTULE AND WOOLSORTER'S DISEASE.

The first name is a synonym for Charbon, or Cutaneous Anthrax, whilst Woolsorter's Disease is the title given to the pulmonary type of anthrax.

The treatment of the pustule should be prompt and radical ; excision, cutting wide of the infected tissue, is advisable, after which the wounded surfaces should be thoroughly disinfected by Perchloride of Mercury solution, Carbolic Acid or the cautery. The injection of a few minims of a 1 in 15 solution of Carbolic Acid or 2 per cent. Iodine at several spots around the basis of the swelling should be performed whether excision be done or not. Some surgeons recommend powerful caustics as Chloride of Zinc, Nitric Acid, Caustic Lime or Potash ; but Braem discards all surgical procedures, and treats the local lesion by applying a 1 in 50 solution of Acetate of Aluminium on lint, whilst the part is elevated and the patient ordered to bed. It is claimed by several authorities that excision is liable to lead to the introduction of the spores or bacilli into the blood ; hence when operative measures are resorted to strong antiseptics should always be freely used locally.

Owing to the danger of the bacillus entering the blood, serum therapy should always be resorted to. The extent of the local lesion and the mildness of the constitutional symptoms give no indications of the gravity of the case. Sclavo's Serum is prepared by immunising asses by injections of attenuated virus gradually increased in quantity and virulence. 30 c.c. should be injected intravenously or hypodermically in all cases and repeated several times during the three weeks necessary for recovery. Carbolic Acid in full doses is advocated by the mouth.

It is worth remembering as an important point in prophylaxis and local treatment that though the anthrax bacillus is speedily destroyed by most antiseptics, when the organisms are allowed to dry up by the evaporation of the blood or serum containing them, spores form in the presence of atmospheric oxygen, and these are practically indestructible.

Woolsorter's Disease occurs in operatives employed in woollen factories, the dried spores finding their way into the lungs from the dried fleeces which are employed in the manufacture of mohair, alpaca, &c. ; hence prophylaxis should consist in the thorough disinfection of the hair or wool coming from all foreign countries where splenic fever is endemic. Once the symptoms have shown themselves the only hope lies in the intravenous injection of 30 c.c. Sclavo's Serum. This preparation preserves its efficacy unimpaired for 2 years when kept in sealed tubes in the dark.

The cardiac failure, high fever and dyspnœa will also require the prompt use of such agents as Strychnine hypodermically, Ammonia and Whiskey along with Oxygen inhalations. Pleuritis and œdema of the glottis must be met by appropriate agents.

The rare intestinal type of anthrax is to be treated on the same lines, the poison in these cases reaching the alimentary canal through contaminated milk or food or by swallowing the saliva which has become infected by the accumulation of the spores

in the naso-pharynx. Muskett strongly recommends large doses of Ipecacuanha as in the treatment of tropical dysentery, and he employs this drug as a dressing for malignant pustule. A paste made with Quinine and Turpentine appears to possess the same antibacterial properties.

MALTA FEVER.

The brilliant researches of Bruce, Louis Hughes, Zammit and others, which led to the demonstration of the *Micrococcus melitensis* as the causal organism of this formidable disease, the coccus being prevalent in the goat and conveyed in its milk, have established the prophylaxis upon a solid foundation, which promises to stamp out the malady. Sterilisation of the milk-supply afforded by the goat or the cessation of its use in Malta and other parts of the Mediterranean basin, in North India and South Africa, where the disease prevails, should be rigidly insisted upon.

Once the symptoms have shown themselves, or the agglutination test has revealed the presence of the disease in any chronic obscure febrile attack, the patient should be ordered to bed, and the general routine indicated in typhoid fever must be patiently carried out. Thus a purely liquid diet is essential, ulceration of the intestine being more frequently present than is generally realised, though Louis Hughes drew attention to this fact early in the investigation of the pathology of the disease. No known antiseptic drug exercises any specific action upon the causal coccus; hence the treatment, as in typhoid fever, must be purely symptomatic. Fever must be reduced by cold packs, sponging and occasional doses of Quinine or full amounts of Spt. Æther. Nit. Diarrhœa, cardiac weakness, constipation, joint pains, neuralgic symptoms, cephalalgia and anæmia in the later stage must be met by the remedies indicated and employed upon rational principles.

Vaccine therapy has been successfully employed by Wright and others, and though inadmissible as a rule in the acute and severe pyrexial forms of the disease, it has achieved marked success in the chronic type of the affection. The importance of the success of vaccine treatment in a disease which may linger on unchecked for a period of 12 months is obvious.

Kenneday, after employing doses of 100 million germs, found that the best effects could be obtained by injections of repeated doses of 6 to 7 million, which brought the temperature down speedily and increased the agglutinins in the blood.

MAMMARY GLAND, Inflammation of.

As this condition is nearly always due to the introduction of staphylococci through fissures or abrasions of the nipple during lactation, preventive treatment directed to the nipple by the application of Boric Acid or weak Mercurial solutions (see Nipple) during the later days of pregnancy and after delivery materially

diminishes the chance of mastitis. Where the gland becomes engorged and painful, *rest* is the first indication. This is obtained by keeping the patient upon her back, with the breast supported by a sling or broad bandage passed under the dependent gland and over the opposite shoulder. The arm should be kept close to the side, but, as a rule, this can be managed by the patient without bandaging.

The question of putting the infant to the swollen gland can only be decided by experiment. It is better to give the nipple rest where the process of suckling is very painful, and indeed in any case where the breast-pump works satisfactorily and removes the accumulated secretion without pain, the child should be nursed by the sound breast from the beginning. The decision to wean should not be too hastily arrived at, as the case may, under judicious treatment, resolve, and the infant should not be deprived of its natural nourishment, but it may be found necessary to abandon feeding at both breasts.

Upon the first symptoms of pain and engorgement appearing the question of cold or hot applications has to be decided. As a rule, it may be said that cold applications are not well borne, and do not give satisfactory results, and their use should not be persisted in if a speedy diminution of the pain, heat, redness and swelling does not occur. The best cold application is the ice-bag. Its use is often persisted in under the misapprehension that warm applications tend to determine suppuration, but, as already mentioned under Lymphadenitis and elsewhere, it has been pointed out that warm or hot applications, by relaxing the tissues and diminishing the pressure, often relieve the tension, which is more or less fatal to the life or integrity of the part affected.

Of all the forms of applying moist warmth to an inflamed breast, the writer finds none so convenient and satisfactory as the following :—A shallow wooden bowl or basin, after the fashion of a small butter-dish, large enough to more than cover the swollen gland, is to be procured. After stuping the breast with hot flannel cloths, a soft sponge or soft flannel squeezed out of hot water is to be laid in the inside of the wooden basin, which is then inverted upon the breast. If the basin is of the proper size a most soothing and comfortable moist warmth can be obtained for hours. Several layers of lint soaked in warm Spirit Lotion (1 to 2) may be used instead, and covered in by a piece of oiled silk. In these ways all the advantages of a poultice, without many of its drawbacks, may be obtained.

When speedy relief does not follow, further time must not be lost by poulticing, but resort should be made to Bier's suction method. A cupping-glass or a Klapp's suction-bell a little larger than the breast should be applied for about 30 minutes once or twice daily, and if this treatment is resorted to early sometimes suppuration is prevented.

When signs of pus become evident a few small incisions or one large enough to admit the forefinger is made under anæsthesia, the cavity explored and any partitions broken down by the finger, and drainage effected by a loose plug of antiseptic gauze. After 24 hours, without removal of the gauze, the cup is applied and a very moderate degree of suction employed for about 5 or 6 minutes. The breast is then permitted to rest for 2 minutes, after which the cup is again applied and the operation repeated at 2 minutes' intervals for 5 or 6 times. It may in severe cases be necessary to resort to the above measures twice a day to facilitate drainage and expedite healing, the wound or wounds being dressed after each sitting by moist boric compresses. Milk may be removed by the ordinary form of breast-glass applied to the nipple, and in most instances lactation need not be suspended. When skilfully applied, the suction-bell should give little or no pain, and this treatment is a great advance upon the older methods for the prevention and cure of mammary abscesses. Old sinuses often heal rapidly under the influence of the suction, but should they remain intractable they must be opened up, packed with gauze and after 24 hours the suction-bell resorted to.

In making the incisions for the evacuation of the pus the lines should radiate from the nipple, so as to avoid cutting across the milk-ducts.

By resorting to the suction method all the older plans of poulticing, friction, massage, belladonna or other sedative applications, elastic pressure, counter-irritation, &c., can be safely abandoned, and the function of the gland utilised for the feeding of the infant during the mastitis and its integrity insured for the lactation of future pregnancies.

By saline purgation, full doses of Iodides, with a small amount of Belladonna or Morphia internally and a judicious diminution of fluids in the dietary, the breast engorgement may be minimised during the early stage of the mastitis.

Retromammary abscesses, whether due to infection from the nipple during lactation or to other causes, are best treated by a free incision made along the lower border of the gland or near the axillary fold and the establishment of free drainage by the introduction of a large rubber tube. In carrying out the suction method of treatment for acute mammary abscess the insertion of drainage-tubes can generally be dispensed with.

The chronic abscess sometimes met with after the menopause is usually the outcome of some mechanical injury which has caused a hæmorrhage into the gland tissue, and it is best treated as if it were a simple cyst, by dissecting out the walls of the cavity, or, where this is impracticable, by a free incision, scraping and drainage.

Galactoceles or milk-cysts formed by the dilatation of a lactiferous duct should be treated by excision of the whole or a part of its wall.

The retention cysts which are often found scattered through different parts of the gland in women about 40 are often associated with more or less chronic non-suppurative mastitis which simulates cancer. This condition, when diffuse, is best left alone in most cases; the only thing necessary is to apply a mercurial or belladonna plaster on soft leather or to strap the breast.

The following independent article on Acute Mastitis written from the obstetrical point of view by Dr. R. J. Johnstone as the present work was passing through the press is appended:

Acute inflammation of the mammary gland may be regarded practically as a disease of nursing women, and in nearly every case its cause will be found to be infection through a cracked nipple. The wise practitioner will therefore make it his business to see that any complaint of pain while the child is sucking is followed by a careful examination of the nipples and by the proper treatment of any crack, fissure, or abrasion that may be present (see Nipples). Unless he is confident of the ability of the nurse to carry out that treatment, he should insist on a dress rehearsal of it being carried out under his own eye.

It is not uncommon to find about the third day after delivery a condition of engorgement of the breasts, which are hard, swollen and tender, and some rise of temperature and pulse may accompany it. If the baby can suck vigorously, this condition quickly yields to its efforts, but if the proper emptying of the breast is not attained, owing to ineffectual attempts by the suckling, measures should be taken to relieve the congestion, as if it is allowed to persist some degree of mastitis will probably be the result. In these cases a good breast-pump is very useful, and its use should be accompanied by the application of a binder around the breasts, which may be covered with a layer of Gamgee tissue or cotton-wool so as to equalise pressure and give some elasticity. In this way the breasts are supported and engorgement is prevented. Instead of the breast-pump the nurse may be directed to massage the breasts. This operation should be performed, for the first time at least, under the eye of the physician, as nurses are prone to massage too vigorously, and in this way are likely to do harm rather than good. The nurse should anoint her hands with olive oil, and should make stroking movements, commencing from the periphery and working towards the nipple. The strength may be gently increased as the massage goes on. Pain felt by the patient is a sign that too much force is being used, and the operation should be accompanied by a sensation of relief and by the evacuation of a considerable amount of milk.

Should the congestion of the breast be followed by the development of a firm, hard, tender wedge-shaped area in the gland, corresponding to a lobule, with reddening of the skin over the area, the practitioner will recognise that he has to deal with a mastitis of mild form. The breast must be emptied periodically by the pump, as it is unwise to allow sucking of

the affected breast for fear of the infant becoming infected. After emptying, a thick layer of cotton-wool is placed over the gland and a firm binder or bandage applied. The external application of poultices, lotions and ointments in such a condition is useless. Under the treatment recommended nearly every case of simple mastitis of this nature will get well in a day or two, and suckling may then be resumed.

In the few cases of this class which do not resolve under treatment, and in the more serious class of cases which result from infection through cracked nipples, and which seldom develop until a week or more after delivery, the inflammatory process attacks not only the gland tissue itself, but the connective tissue between and around the lobules also, and the tendency of the process is towards the formation of abscesses. There is no limitation to a wedge-shaped lobule, but a more or less rounded area of infiltration, which may involve the whole organ in bad cases, is to be made out. This area is firm and exquisitely tender; the whole breast is enlarged and tends to hang down; the skin is reddened, and when pus has formed becomes œdematous and pits on pressure. The baby should be at once taken off the inflamed breast and engorgement with milk relieved by a breast-pump.

Weaning need not be resorted to unless both breasts are affected, unless suckling with the sound breast causes great pain and engorgement in the inflamed one, or unless suppuration persists for a long time in spite of treatment. Any cracks or fissures about the nipple should be treated at once by painting with cocaine solution and then with Tr. Benzoin Co., Nitrate of Silver (gr. x. to ʒj.), or pure Carbolic Acid. To the breast itself warm applications are soothing, and may do good by promoting the flushing of the part with blood. Cold applications and evaporating lotions should be avoided. A poultice of lint wrung out of hot saturated boracic acid solution, with a few drops of laudanum sprinkled on it and covered by oiled silk makes a very good application. Warm lead and spirit lotion under oiled silk may be used. Linseed or bran poultices are not to be recommended, as they are too heavy and bulky, and rapidly lose heat. The most instant cry of the inflamed breast, however, is for support, and this should be given by covering thickly with cotton wadding and bandaging or applying a binder firmly. The wadding may be put on over the poultice, and will assist in retaining heat; or the breast may be painted with Glycerin of Ichthyol (10 per cent.), or with Liniment of Chloroform and Lin. Belladonna equal parts, and the cotton-wool then applied. Quite a satisfactory method is to warm the wool in the oven and apply it thickly over the breast with a firm binder over it, using no medicaments at all. Antiphlogistine warmed and spread thickly over the inflamed area is recommended. Bier's hyperæmic treatment applied by the aid of a

special large-sized cupping-glass to include the entire breast has been very well spoken of. Constitutional treatment should not be neglected. A smart saline purge (Magnesium Sulphate or Rochelle Salt in warm water or lemonade in the morning on a fasting stomach) should be given. The diet should be light but nourishing, and fluids should be restricted to prevent too copious a secretion of milk. If there is much pain and sleeplessness a small dose of morphia may be required.

Whatever method be adopted, the practitioner should make a careful daily examination of the breast for the œdema and pitting of the skin, which warn him that pus has formed, and one drawback to the use of coloured ointments and unguents is that they more or less hide the skin and may prevent the early detection of this important sign. As soon as pus has formed it is neither kind nor fair to the patient to delay incision. There is no hope of its becoming absorbed, and if tempted to allow evidence of pointing of the abscess to present itself before an incision is made, the practitioner should remember while the suppurative process is approaching the skin surface it is spreading at an even more rapid rate through the less resistant tissues in the depths of the gland, so that an originally small pocket of pus is being converted into a large branching and loculated cavity which may take weeks or even months to heal up in place of a few days.

A suppurating breast should always be opened under an anæsthetic and with strict antiseptic precautions. The incision should be an inch to an inch and a half long, and should lay the abscess cavity open and not merely puncture it. It should run radially from the nipple, and be placed preferably at the most circumferential part of the abscess. The finger should be introduced through the incision and should break down any septa that are found so as to throw the cavities into one. If there is extensive suppuration it is more satisfactory to make two or three openings rather than to attempt to drain the whole area through one incision, no matter how large or how favourably placed. The cavity should be washed clear of pus and débris with 1 in 2,000 Perchloride or drachm to the pint Lysol, or Creolin solution delivered from a douche can through an ordinary vaginal nozzle into the cavity. When this has run off, the whole of the cavity and its recesses should be loosely packed with iodoform or double cyanide gauze wrung out of antiseptic solution, a thick layer of cotton-wool put on over the entire breast, and a firm binder or bandage applied. The packing should be removed next day and a fresh one inserted, and this should be repeated until the cavity has granulated up, a process which takes place in a wonderfully short time as a rule. Sometimes the breast itself escapes infection, but an abscess forms behind the gland. This should be incised early along the lower border of the breast, otherwise its spread in the loose retromammary tissue will be very rapid.

Chronic mastitis is found occasionally as the result of injury. More commonly it arises in women who have nursed children, probably as a late result of an indolent infection during lactation. The breast is hard, knotty and tender, and the axillary glands are usually enlarged. The condition may be confounded with scirrhus, but on compressing the breast between the flat hand and the chest wall it is evident that a true tumour is not present. The most satisfactory treatment is to strap the breast either with adhesive plaster or with a mercurial plaster. This usually effects a cure if persisted in for a few weeks. The plaster should be removed and the breast re strapped at least once a week.

A tuberculous mastitis is sometimes observed, and such cases seldom recover without amputation of the breast.

In some cases of chronic mastitis occlusion of one or more ducts takes place with the subsequent development of a cystic swelling (galactocoele). If the cyst does not subside under strapping, it should be punctured, or a piece of its wall excised and the cavity packed.

MANIA.

The treatment of the different forms of mental disease, as mentioned under Insanity, can only be carried out in special institutions possessing the numerous requirements which are now considered necessary for the successful management of the insane. This remark applies also to ordinary acute mania, but it will be necessary to briefly refer to the management of acute delirious mania, a serious and often fatal disease coming on with surprising suddenness, and requiring treatment before the necessary removal to an appropriate asylum can be determined upon or carried out.

The first point in the management of such cases after isolation from friends and relatives is to look closely to the feeding, and as the patient almost always refuses food, forced feeding should be commenced without delay, and steadily insisted upon in spite of all obstacles every third or fourth hour during the day and night. Strong broths, beef essences, milk and eggs, and a small quantity of stimulant in most instances should be introduced into the stomach by means of the India-rubber tube. Nutrient enemata should be also given.

Sleep and quiet must be secured, and Sulphonal, Trional, Paraldehyde, Bromide of Potassium, Hyoscine, or Veronal is called for. Hydrobromide of Hyoscine subcutaneously in doses of $\frac{1}{200}$ gr. every hour for three doses is relied upon by Savage in severe cases. Opium is to be avoided, unless other hypnotics fail. Chloral is the favourite drug, and with many specialists the treatment of this affection is summed up in the words "feeding and chloral." Peterson advocates the use of the hot wet pack as the best sedative in this condition, and the patient (who often

falls asleep) may be kept in it for hours. It may be applied as described under Bright's Disease.

W. Graham recommends the warm bath (96° to 98°) in acute mania, the patient being immersed for several hours at a time, during which food may be administered. There can hardly be a doubt about the advisability of removing this class of patient to a properly equipped asylum as soon as arrangements for his admission and conveyance can be completed. The danger of sending such cases on a sea voyage as soon as the first outbreak of delirium or impulsive excitement has subsided is obvious, though in ordinary acute hysterical mania in its later stages a change of scene under the skilful control and close attendance of a trained nurse is often advantageous.

MARASMUS.

This condition must be regarded as a symptom and not as a disease. Only the infantile form need be considered. The primary cause of the error in nutrition should be carefully sought for before treatment upon rational grounds can be commenced ; thus the malnutrition or marasmus accompanying congenital syphilis on being recognised will yield speedily as a rule to the administration of Mercury.

Pyloric obstruction of congenital nature is another primary cause which yields at once to operative treatment, and obstinate constipation, whether functional or organic, is of the same order. Disease of the mesenteric glands following the ingestion of tubercle-infected milk, and congenital heart lesions are causes not to be lost sight of.

In the great majority of cases, however, infantile marasmus and malnutrition are due to catarrhal or other states of the alimentary canal, the result of improper feeding. The unsuitable food in the first instance sets up diarrhoea and gastritis, and the irritated mucosa is still further outraged by a continuance of the improper feeding. The infant may perish from starvation with abundance of food in the stomach or intestines, which no longer are able to digest proteids, fats or carbohydrates.

The condition is very frequently the result of feeding with cow's milk, in which case the child's napkins will reveal tough, putty-like masses of curd which shake off easily almost without soiling the linen. Few therapeutic results are more striking than that which may be witnessed by placing the wasted infant at the breast of a healthy wet nurse, and when such an aid is procurable the problem is at once solved, but in the absence of the natural nourishment the complex question of artificial feeding must be faced.

The cow's milk obviously cannot be continued unless, as in some cases, it has been administered in such amounts or in such strengths as prevented its digestion. As regards the question of dilution, the common rule of 1 part of cow's milk to 2 of

water or barley water, which is suitable for new-born infants, may produce marasmus if continued till the child is 9 months old; by that age a child fed on cow's milk should be getting the liquid diluted with not more than one-fourth part of its bulk with water.

The addition of Sodium Citrate, 1 to 2 grs. to each oz., permits of cow's milk being given in an undiluted form to wasted children who cannot otherwise digest milk proteids, and if cow's milk is to be given this should be added to it after Pasteurisation at a temperature of 140° F. for 20 minutes, and this food is often digested when weak boiled cow's milk cannot be assimilated. Sterilisation by boiling is unnecessary under ordinary circumstances, and often is objectionable.

When the marasmus is due to inability of the infant to digest fat, the curds found in the motions will be small and soft, and consist of saponified fats. Under these circumstances the milk must be skimmed before use. Marasmus may be the direct outcome of feeding with cream, especially when the cream is separated by centrifugalisation, and contains any preservative like boric acid or salicylates. It is a common mistake to add cream to the milk used for feeding as soon as the child is observed to be wasting, the wasting being sometimes due to the already high percentage of fat contained in the milk. More than 3 per cent. of fat is, as a rule, injurious. Ass's milk is sometimes resorted to when cow's milk cannot be tolerated. Buttermilk, when scrupulously prepared, meets all requirements in such cases, and is decidedly preferable to the innumerable new-fangled lactic acid compounds in which various strains of the bacillus are added to cow's milk. Carpenter's method of procuring pure buttermilk for infant feeding is simple and easily carried out. A quantity of fresh clean milk is permitted to stand for 24 hours in a glass vessel at 70° F.; the cream is skimmed off and the sour milk churned for 15 minutes, after which it should be kept on ice. To each pint of this buttermilk $\frac{1}{2}$ teaspoonful of wheaten flour and 2 tablespoonfuls of granulated sugar are added before the mixture is brought to the boiling-point.

Where milk proteids cannot be digested, beef-juice, clear soup or veal broth thickened with barley may be substituted till the gastro-intestinal catarrh is combated, after which peptonisation of the milk with a pancreatic preparation, or the addition of $\frac{1}{2}$ gr. Papain to each bottleful of cow's milk diluted with barley water, may be commenced. Desiccated milk food, Benger's, unsweetened condensed milk, Mellin's, Allen and Hanbury's No. 1, Clay Paget's and Vacca milk may be tried. Starchy compounds should as a rule be withheld till after the sixth month, though barley water as a diluent may be employed at all stages of infantile life. The writer believes that one of the most valuable methods of improving the nutrition of the body in infantile marasmus is inunction with Cod-Liver Oil and the application of

a binder saturated with this drug and covered with mackintosh sheeting, as described in the treatment of Mesenteric Diseases.

Drugs are admissible only in as far as they may be useful to combat the gastro-intestinal catarrh, and Grey Powder in minute doses occasionally is a valuable intestinal disinfectant. Thyroid Extract has been extolled, but its *modus operandi* has not been made clear. Lavage of the stomach and colon has been employed in some cases with advantage, but as a rule it is impracticable as a routine. Diarrhœa will call for the exhibition of Tannalbin, or minute doses of Calomel and the various agents mentioned under Diarrhœa.

Sea-water injected hypodermically has proved of great value in the hands of Robert-Simon of Paris, who states that after a single injection the child may be able to retain and digest a normal meal of cow's milk. Other observers state that ordinary saline injections are equally valuable.

MASTOID CELLS, Suppuration of—see Ear, Diseases of.

MASTURBATION.

The physician's advice is often sought for by parents who have detected their children in the act of practising this degrading habit. A careful examination of the genitals should be made, and any source of irritation removed if possible. Thus an adherent prepuce is a common cause which should be remedied by forcibly drawing back the foreskin so as to expose the glans thoroughly. A pinhole prepuce should be dilated or slit, and a long prepuce will demand circumcision. The operation removes a constant source of suggestive irritation, and, moreover, makes a long break in the habit, which should be followed up by close supervision and moral treatment.

In girls any unhealthy condition of the genital organs may lead to the establishment of the habit, and absolute cleanliness, with close supervision, may lead to a removal of the trouble. With older girls, who have been educated by others into the practice, only moral treatment will be of use. These cases are most unsatisfactory, as too often the habit of masturbation gets hold of those in whom the moral sense is but feebly developed.

It is sometimes a symptom of mental deficiency or the first indication of some psychical disturbance, and has too often been regarded even by specialists as the *cause* instead of the *result* of insanity.

Where moral treatment fails, resort to mechanical methods of preventing the act may be tried by tying the hands after undressing at bed-time, and by arranging that the patient shall not sleep alone, or when the habit is practised during dreaming, by causing the patient to sleep with a hard body like an empty cotton reel fastened over the spine, so that when he turns upon his back during sleep its pressure awakes him. The plan of

blistering the penis or labia is a severe and almost brutal method, open to serious objection, and not even likely to be followed by any permanent benefit.

The regular emptying of the rectum by laxatives or purgation and the removal of threadworms or anal irritation from whatever cause are not to be overlooked. The habit has been known to arise from the irritation caused by the presence of a stone in the bladder.

Precocious sexual excitement is to be minimised by the avoidance of bad companions and indulgence in filthy conversation and impure literature. Free open-air exercise, pushed to the extent of inducing fatigue before bed-time, plain, unstimulating food, change of scene, of amusements and of surroundings, and attention to every measure calculated to improve the physical tone, should be advised.

Drugs are not to be depended upon when moral treatment fails, but where there is a continual struggle between an unhealthy, precocious, sexual appetite, and a weakened will, victory may be won for the latter occasionally by the administration of Bromides in conjunction with cold baths. Blistering over the occiput and upper cervical spines is occasionally useful in allaying the excitability of the sexual centres.

The physician is often consulted by physically healthy patients who have practised the habit of masturbation for a time during boyhood, and who become hypochondriacal or almost insane, after the perusal of some sample of pernicious quack literature, with the thought that they have ruined themselves. In such cases the firm assurance of the physician that the habit has left no injury behind it generally restores the patient's mind to a healthy state.

Regarding preventive treatment, it is a debatable question whether boys should be warned against the evils of a practice of which they may know nothing, and there cannot be a doubt but that in some few cases such warning may produce the opposite effect, though many authorities who have had considerable experience of the training of boys follow the practice of sounding an alarm as a matter of routine. To be free from objections such warning must be most judiciously administered to innocent and sensitive youths.

For the cure of masturbation in insane patients, Clarke has successfully performed neurectomy, removing $\frac{1}{2}$ inch of each of the nerves on the dorsum of the penis through a transverse incision $\frac{1}{2}$ inch from the root of the organ.

MEASLES.

The general hygiene, nursing and feeding required in the treatment of a case of morbilli are practically identical with those indicated in the management of the other exanthematous fevers—scarlatina, r  theln, typhoid, typhus and variola.

Prophylaxis is of vital importance, and in this connection it must be remembered that the infectiousness of the disease is intense before the rash appears ; hence the importance of the recognition of measles at the earliest possible period to insure thorough isolation of the patient. The diagnosis will be helped by the presence of Koplick's spots on the buccal membrane, and these must be always sought for. Unfortunately the working-class population, amongst whom epidemics of this disease spread with alarming rapidity in congested city areas, are possessed with the idea that the sooner a child gets over its inevitable attack of measles the better, so that it is often practically impossible to carry out isolation methods. Thousands of lives of young infants are annually sacrificed which might be saved by a rigid compulsory notification, which would lead to the temporary closing of infant schools and isolation of all infected children.

No convalescent patient should be permitted to mix with the healthy till after a period of 21 days.

As soon as the attack declares itself the child should be put to bed. A wire spring-mattress, upon the top of which a thin, hard hair - mattress is placed and a moderate amount of bedclothes should be provided. The temperature of the sick room should not be allowed to exceed 60° F. Certainly, in the absence of special reasons, such as laryngeal complications, the atmospheric temperature should not exceed 65° F. Thorough ventilation should be secured, and a continuous supply of pure warm air is essential. Owing to the irritability of the respiratory mucosa it will generally be found necessary to have some arrangements for moistening the air ; the ordinary bronchitis kettle answers all requirements. Where the physician has the choice of rooms for the treatment of any of the exanthemata, he should select a large, airy apartment, with an open grate, and, when possible, with a ventilator opening into a flue. The bed can be surrounded by a couple of screens in a large room ; this will enable the most thorough ventilation to be carried out without subjecting the patient to draughts of cold air. It is very desirable to have two beds in the sick room, one for the day and the other for the night, and, when possible, it is an even better plan to have one bed for the night in an adjoining room which communicates directly by a door with the day room. When two children are to be treated, they should each have a separate bed, and the ventilation of the room must be most thorough.

In a case of measles it is customary to have the light subdued by partially drawing the blinds, but the complete darkness so often insisted upon is unnecessary, and the patient's own feelings may be taken as a guide in this matter. Bright sunlight should, when possible, be admitted into the room and be allowed to flood every part of its atmosphere save that in the immediate neighbourhood of the patient's eyes, which may be shaded by a

curtain, screen or by the drapery of the bed ; but the fewer bed hangings the better.

Every unnecessary article of furniture should be cleared out of the room, and nothing must be left in it which afterwards cannot be submitted to thorough fumigation or disinfection. The physician should give such instructions regarding the use of disinfectants during the illness as will prevent the risk of injury to the patient by their being employed too freely. In treating infectious diseases in the patient's home, it is a good plan to place a large vessel filled with water and Condyl's Fluid (about 1 in 50) outside the door of the sick-room. Into this vessel all articles leaving the room may be dipped. In the case of scarlatina and smallpox, a sheet moistened occasionally in a solution of Carbolic Acid (1 in 80) or Chlorinated Lime (1 in 200) may be suspended outside the door, in order to more effectually cut off the room from the other parts of the house ; the same plan should be carried out in measles when other children are residing in the household. Urine and fæces should be passed into vessels containing a small quantity of some disinfecting or deodorising substance. Terebene, Eucalyptus, Carbolic Acid, or other volatile antiseptic may be diffused through the atmosphere occasionally by a spray apparatus.

The treatment must be entirely symptomatic ; no known drug exercises any specific action over the causal morbid agent.

The following old-fashioned mixture can do no harm, and often affords some relief by encouraging the action of the skin ; it may be administered till the decline of the eruption in doses of a teaspoonful every 2 or 3 hours to a child 2 to 5 years old.

R. *Spiritus Æther. Nitrosi* ʒij.
 Liquor. Ammon. Acetat. ʒij.
 Syrupi Croci ʒj.
 Aquæ Destillatæ ad ʒiv. *Misce.*

Where the patient can take milk freely there is no difficulty as regards diet, as milk alone or diluted with half its amount of Lime-water, or aerated water may be given in any quantity. Where the patient has a natural dislike to milk, weak soups, beef tea or any liquid nourishment may be given. It is, however, a mistake to force nourishment under these circumstances. Often a child who refuses milk can be tempted to take tea, and this may consist chiefly of milk flavoured with a little tea. In such a liquid, biscuit may be soaked, or toast and crumb of bread may be added.

As the temperature rises thirst increases, when diluent drinks may be freely given, and it is wrong to refuse cold water when the patient craves for it. It is difficult to see the origin of the popular prejudice against water being allowed to patients parched

with fever. It should only be temporarily withheld in those instances where it is taking the place of nourishment. Weak barley water, to which lemon-juice and a little sugar have been added, or home-made lemonade may be freely given. When thirst is very great, ice may be freely administered in small quantities.

Very high temperature must be checked, and, as there is a strong objection to the cold bath as an antipyretic before the appearance of the eruption, when the thermometer registers and remains above 104° an antipyretic should be administered. Quinine is the safest and best of these, and may be given in doses of about $\frac{1}{2}$ gr. for each year of the child's life every 4 or 6 hours; higher temperatures will require doses of double the above.

The newer antipyretics may be employed, but only for short periods. 1 gr. Antipyrine may be given every 3 hours to a child from one to two years old. When hyperpyrexia occurs after the rash has come well out, and where the temperature reaches 106° or more, a tepid bath or cold pack should be at once given, and the patient kept in it till the temperature falls to normal. With a good nurse, sponging of the body in detachments answers most requirements, and the water at first may be tepid and afterwards cooled down. The bowels should receive one moderately smart clearing out by a saline purgative, and further purgation is unnecessary unless constipation set in. Diarrhœa, if present, should not be interfered with unless it threaten to exhaust the patient's strength.

Coryza requires little interference, as it rapidly subsides upon the decline of the eruption, and is generally relieved by cutting off the supply of bright light. If congestion of the conjunctiva remains a 3 grs. per oz. Boric eye-wash may be used.

Cough is often severe, and in some cases almost alarming, and is liable to resist drugs till the eruption begins to fade. The diffusion of steam through the air or an inhalation of Hemlock Juice or a very weak Carbolic spray to the fauces, and Ipecacuanha Wine internally and warm poultices externally, generally afford relief. In adult patients Tartar Emetic (20 mins. of the wine, with 5 mins. of Liquor Morphię) may be given with advantage to loosen the expectoration, but drenching with nauseating expectorants must be avoided when possible.

Laryngeal irritation, like the bronchial mischief, is best treated by warm inhalations.

Severe cephalalgia should be met by a small dose of Antipyrine and a sinapism to the nucha. A smart purge is indicated for the relief of this symptom if the bowels have not been already well moved.

Vomiting is best relieved by mustard to the gastric region and small quantities of iced soda-water, and peptonisation of the milk.

Itching, when the eruption is well out, may be a troublesome

symptom. It is generally relieved by sponging the limbs and face with a warm or tepid solution of Bicarbonate of Soda, and by anointing the skin with weak Carbolic or Eucalyptus Oil (1 in 40).

In the early stage should convulsions occur, or where stupor with marked exhaustion is observed before the appearance of the eruption over the entire body, especially when traces of it have been observable for one or two days about the head, a *hot* bath should be given, with the view of causing a smart determination of blood to the cutaneous surface, and when in the bath cold affusion to the head is very valuable. After such a bath the body should be properly rubbed dry with warm towels, and the patient wrapped up in flannels and put to bed before the possibility of a chill occurs.

Delirium in the early stage is due to the intensity of the fever, and yields to antipyretic treatment; at a later stage it may indicate meningeal trouble, and should be treated by closely clipping the hair and applying the ice-cap.

Convulsions at a later stage, like delirium, generally indicate the onset of some serious complication, such as pneumonia or meningitis, which is to be met by the administration of such remedies as are indicated in these affections.

The onset of any serious symptom, if accompanied by the sudden fading or recession of the rash, may be met by a brief immersion of the child's body in a hot bath containing mustard, but if this treatment is adopted cold should be applied to the head during the bathing.

Pneumonia is a most serious complication, usually taking on the type of capillary bronchitis or broncho-pneumonia; it often runs a slow course, and must be met by poultices and stimulating expectorants, as Ammonia, &c., described in the article on p. 114. Strychnine for symptoms of heart failure may be indicated, along with small doses of Alcohol, and Oxygen inhalations should be resorted to if cyanosis supervene. As the pneumonia of measles, like that of influenza, is distinctly infectious, a child suffering from the complication should not be treated in the same room with other measles patients.

Troubles in the middle or internal ear, ophthalmia, adenitis and other complications are to be met by the remedies mentioned under the names of these affections, and since the microbes which cause many of the complications of measles are always to be found in the mouth, Dawson Williams points out the necessity of disinfecting mouth-washes and sprays. These latter are of great value in preventing otitis, and they may be supplemented by careful syringing or washing out of the naso-pharynx, immediately after which gentle Politzerisation may be occasionally carried out.

Alcoholic stimulants are seldom necessary in ordinary uncomplicated cases, but where serious complications as those just mentioned are present they must be judiciously administered. Wine whey is the best form for the administration of alcohol,

and it is usually readily taken by children. A wineglassful of Sherry added to a pint of boiling milk causes curdling, and the curd should be strained out or permitted to settle down.

In the presence of whooping-cough as a complication of measles stimulation is usually necessary. Any suspicion of a diphtheritic membrane on the throat should be immediately met by serum-therapy.

The exhaustion and serious drain made upon the system by a severe attack of measles often lead to a fatal issue, notwithstanding the popular notion that the disease is generally a trivial ailment; hence, after the decline of the eruption, every care must be taken to keep up the general strength by large quantities of easily digested and easily assimilated food.

The after-treatment is sometimes of much greater importance than the management of the case prior to the decline of the fever. Tonics may be needed to improve the appetite, and Iron to combat the anæmia which often results. These objects may be accomplished at the same time by giving a mixture containing Quinine, with small doses of the Tincture of Iron. Cod-Liver Oil is very valuable at a later stage.

As desquamation sets in the skin may be anointed after a warm bath and drying, by Olive Oil containing 5 per cent. Eucalyptus Oil; this relieves all itching and tends to diminish the spread of the disease to others.

The patient may generally be permitted to leave his bed, in the absence of complications, though still to remain in his room, after the lapse of a week. It is difficult to keep those who have just passed through a mild attack of measles from exposing themselves to the variations of temperature out-doors. The children of the poorer class run about in the open air often before the eruption has entirely faded, and the result is that numbers of them perish from secondary bronchial or pneumonic troubles. The dangers of exposure should be insisted upon to parents, and the body should be well enveloped in flannels, even in the summer-time. In winter, a child should not be permitted to take open-air exercise for at least a month after the seizure. Drives should not be permitted till the patient has been allowed to move about.

To all who have had much experience in the extern department of a children's hospital, it is evident how numerous are the cases of phthisis and severe visceral and bone affections, whose origin can be traced to the shattered state of health following measles, which depresses the natural resistance to the omnipresent tubercle bacillus, and permits of the unopposed progress of the various types of tuberculosis. These grave sequelæ are certainly more common after measles than after the other members of the exanthemata, and this consideration points to the real necessity for prolonged careful feeding by highly nourishing food and by milk, sterilised or Pasteurised, together with every form of improved hygiene possible.

UNIVERSITY OF CALIFORNIA LIBRARY
Los Angeles

This book is DUE on the last date stamped below.

Form L9-50m-11,'50(2554)444

THE LIBRARY
UNIVERSITY OF CALIFORNIA

